

ORDER NO. MKE0103203C1
B15 (U.S.A.), B4 (PUERTO RICO)

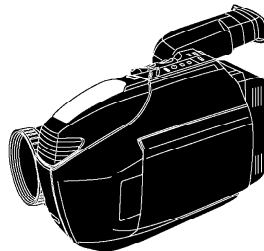
Service Manual

Compact VHS Camcorder

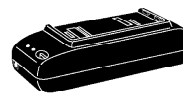
Palmcorder® **VHS**

PalmSight™

PV-L671 / PV-L691



MODELS: PV-L671/ PV-L691



MODEL: PV-A19-A

SPECIFICATIONS

ITEM	SPECIFICATION	1	2	ITEM	SPECIFICATION	1	2
Power Source	Compact VHS Camcorder: DC 6 V AC Adaptor: 110/120/220/240 V AC, 50/60 Hz Battery: Nickel-Cadmium Type DC 6 V	○	○	Pick-Up System	Sequential color difference field reverse system	○	○
		○	○	Pick-Up Device	One integral color filter Charge Coupled Device (CCD)	○	○
Power Consumption	Compact VHS Camcorder: 6 V DC 8.5 W (Max. 11.5 W) AC Adaptor: 19 W 1.2 W (when not in use.)	○	○		26 : 1 zoom lens, F1: 1.6 with auto iris control Focal length: 3.8 mm - 98.8 mm 4 speed power zoom function Lens filter diameter: 49 mm	○	○
Video Signal	EIA Standard (525 lines, 60 fields) NTSC color signal	○	○	Lens		○	○
Video Recording System	Head: 2 rotary heads plus flying erase head. Helical scanning system 4 rotary heads plus flying erase head. Helical scanning system Signal-to-Noise Ratio: SP: more than 43 dB SLP: more than 41 dB Horizontal Resolution (Color/Monochrome) Recording: more than 300 lines Playback: more than 230 lines	○	○	Viewfinder	10.2 mm (0.4 inch) Electronic Viewfinder	○	○
		○	○	LCD Monitor	76.2 mm (3.0 inch) Liquid Crystal Display	○	○
		○	○	Memory	8 MB CompactFlash Card	○	○
		○	○	Image Size	FINE: 640 x 480 pixels Normal: 320 x 240 pixels	○	○
		○	○	Image Storage	FINE: Approx. 60 images Normal: Approx. 240 images	○	○
Audio	Head: Normal Mono: 1 stationary head MIC Input Level (M3 type) - 70 dB Frequency Response: Normal Mono: SP: 100 Hz - 8 kHz SLP: 100 Hz - 5 kHz Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB SLP: more than 40 dB	○	○	Image Format	JPEG	○	○
		○	○	Minimum Illumination Required	0.8 lx (F1: 1.6) 0.08 footcandles 7 lx (F1: 1.6) 0.7 footcandles (EIA Standard)	○	○
Tape Speed	SP: 1.5/16 i.p.s (33.35 mm/s), SLP: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: SP: Max. 30 min, SLP: Max. 90 min, with TC-30 Tape FF Time: Less than 7 min. (TC-30 Tape) REW Time: Less than 4 min. (TC-30 Tape)	○	○	Operating Condition	0 °C-40 °C (32 °F-104 °F) (Temperature) 10 %-75 % (Humidity)	○	○
Tape Format	Tape width 0.5 inch (12.7 mm) high density tape	○	○	Weight	1.02 kg (2.25 lbs.)	○	○
				Dimension	120 mm x 122 mm x 186.5 mm (W x H x D) (4-3/4 inch x 4-3/4 inch x 7-3/8 inch) (W x H x D)	○	○

1. PV-L671
2. PV-L691

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

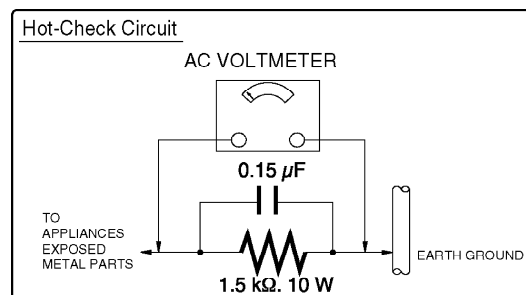
1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the

equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M Ω and 5.2 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be infinity.

LEAKAGE CURRENT HOT CHECK
(See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5 k Ω , 10 W resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with 1 k Ω /V or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Figure. 1



2. PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION :

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing

together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

3. X-RADIATION

WARNING :

1. The potential source of X-Radiation in EVF sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 10 kV without causing X-Radiation.

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

3. Measure the High Voltage. The meter (electrostatic type) reading should indicate $2.2 \text{ kV} \pm 0.1 \text{ kV}$. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

4. OPERATION GUIDE

5. SERVICE NOTES (PLEASE READ)

5.1. SERVICE NOTES

5.1.1. EXTENSION CABLES FOR SERVICE

Using the following Extension Cables, place the unit as shown for check and service.

No.	PART NUMBER	PART NAME	CONNECTION
①	VUVS0007	12Pin Extension Cable	FP8 on Main C.B.A. ~ CCD F.P.C. on Lens Unit
②	LSUA0020	20Pin Extension Cable	FP9 on Main C.B.A. ~ Lens F.P.C. on Lens Unit
③	VUVS0015	28Pin Extension Cable	FP1 on Main C.B.A. ~ A/C Head/Capstan F.P.C. on VCR Mechanism Chassis Ass'y
④	LSUA0021	26Pin Extension Cable	FP3 on Main C.B.A. ~ Top Operation F.P.C.

NOTE:

1. When using the cassette tape:
 - A. Be sure to remove a cassette lid cover of cassette tape.
 - B. Be sure to install the Lock Screw to Cassette Up Unit. After servicing, be sure to remove the Lock Screw.

Refer to "**HOW TO HOLD THE CASSETTE UP UNIT IN THE DOWN POSITION WITHOUT CASSETTE COVER INSTALLED.**"

C. Select the H. SAFETY DEFEAT in SERVICE MODE. Refer to "**SERVICE MODE SPECIFICATION (SELF-DIAGNOSTIC SYSTEM)**".

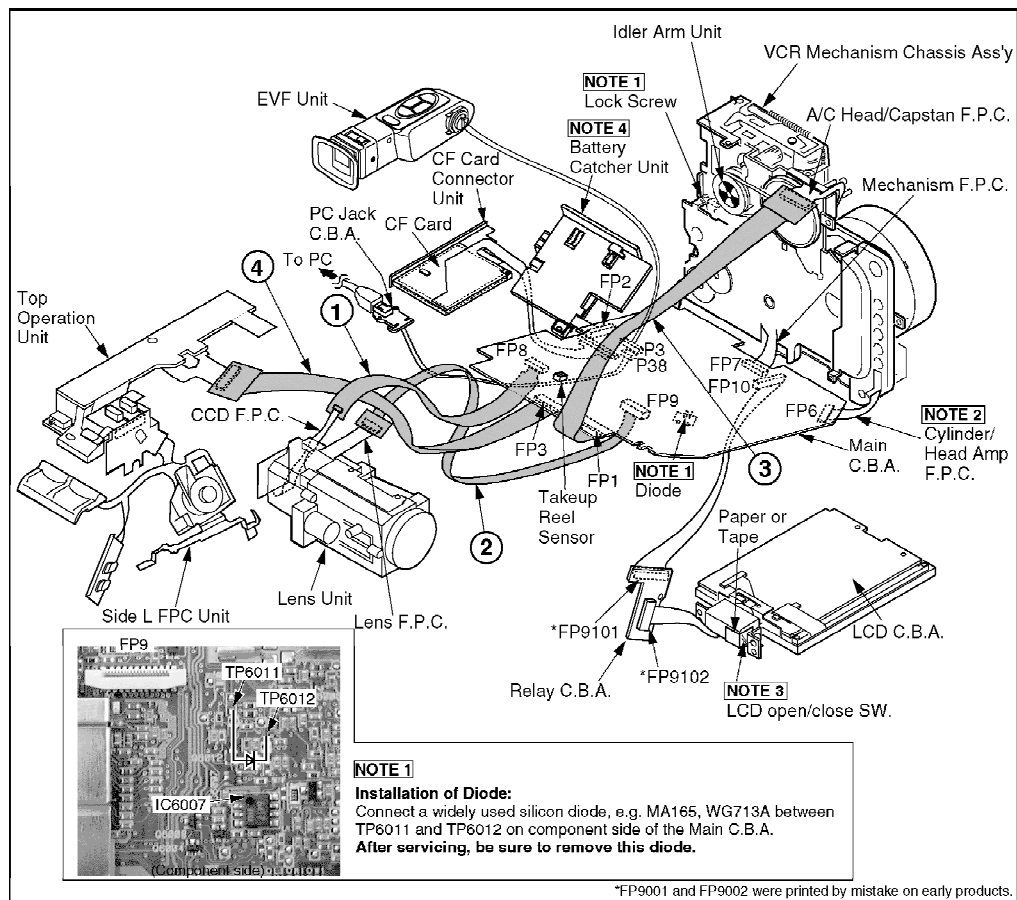
"

Or, connect a silicon diode on component side of the Main C.B.A. as shown to defeat safety function.

(Since Takeup Reel sensor, located on Main C.B.A. does not work when opening Main C.B.A., the mechanism does not work (Reel lock). Therefore, make sure to defeat Safety function.)

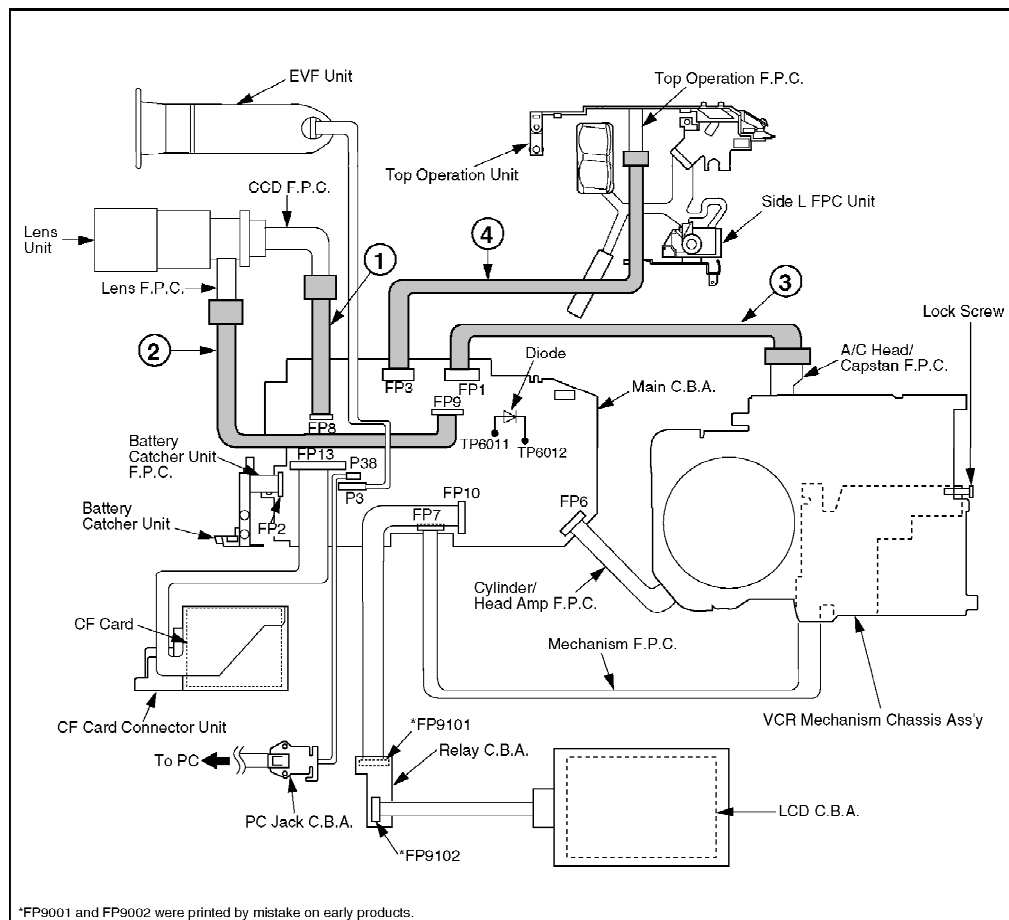
2. Use extreme care so as not to apply any excessive pressure to the Cylinder/Head Amp F.P.C. After servicing, be sure to place it correctly. Refer to "**Cylinder Unit**" in "MECHANISM SECTION."
3. The LCD open/close SW. is for changing between LCD Display or EVF Display. When turning on LCD Display, place some paper or tape, etc. on LCD open/close SW. so that this SW. stays ON.
4. When servicing, avoid causing a from touching the component side of the Battery Catcher Unit to the Main C.B.A.
5. Use a grounded ESD wrist strap while disassembling the Lens portion.
6. Use extreme care when unplugging or plugging in connectors.

Fig. 1-1



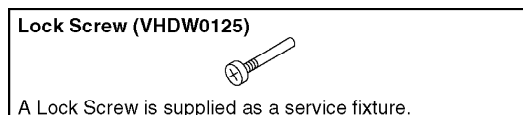
5.1.2. INTERCONNECTION OF EXTENSION CABLES

Fig. 1-2



5.1.3. HOW TO HOLD THE CASSETTE UP UNIT IN THE DOWN POSITION WITHOUT CASSETTE COVER INSTALLED

The Cassette Up Unit will be in the up position without the Cassette Cover installed. To hold the Cassette Up Unit in the down position without it, a Lock Screw is needed.



5.1.3.1. How to install the Lock Screw:

1. (With Cabinet Parts) Before installing the Lock Screw, slide the CF Card Connector Unit as shown in Fig 2-1.
2. If the Lock Lever, shown in gray, is set to Position "A" (No hole), change Position "A" (No hole) to Position "B" (Hole) as shown in Fig. 2-2 by pushing Portion (a) as shown in Fig. 2-1.

Note:

If the mechanism is in EJECT position, the Lock Lever cannot be changed to Position "B" by pushing Portion (a). In this case, apply the power to set the mechanism to STOP position.

Fig. 2-1

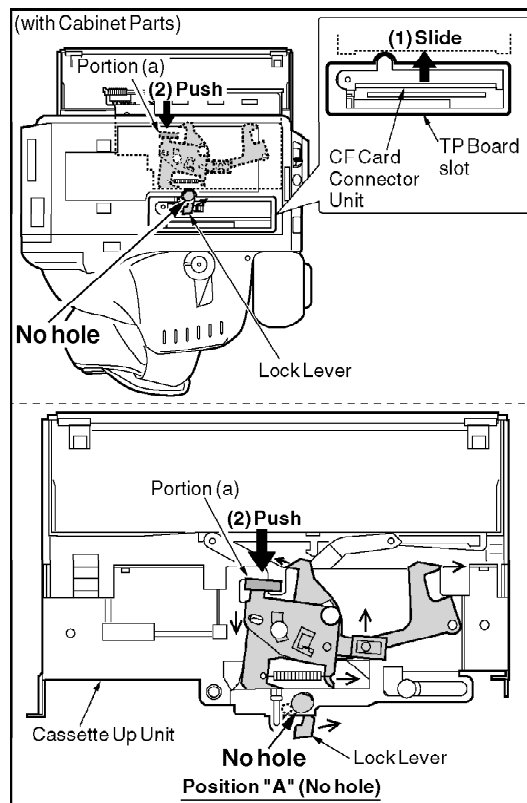
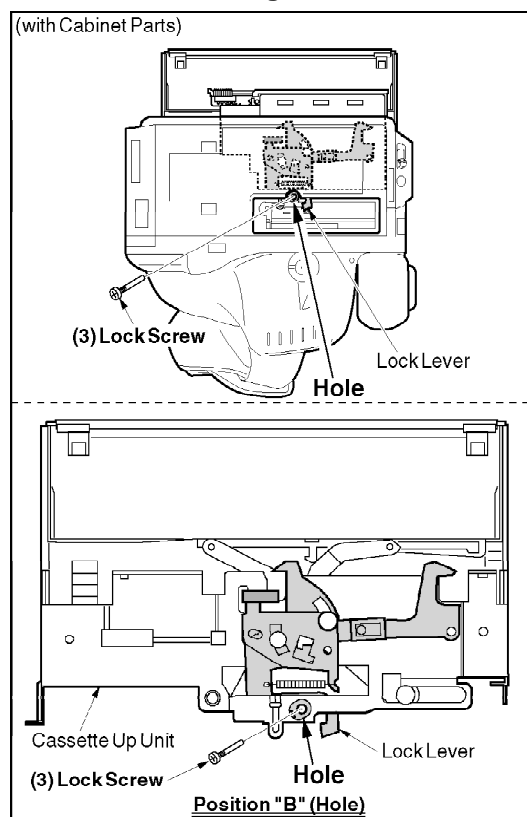


Fig. 2-2



3. Install the Lock Screw in the Hole (Threaded Hole for Lock Screw)

access) in Position "B".

4. Hold down the Cassette Up Unit.

5. Confirm that Cassette Up Unit will be held in the down Position.

5.1.3.2. Lock Screw is required when:

1. performing "Tape Interchangeability Adjustment."
2. performing "PC-EVR Adjustment" with cassette tape.
3. servicing with cassette tape in Service Position. The procedure below is required when the unit is in safety defeat mode.
 - A. Confirm that the Lock Lever, shown in gray, is set to Position "A" as shown in Fig. 2-1, and that the mechanism is in the STOP position.
 - B. Insert the cassette tape.
 - C. Push Portion (a) as shown in Fig. 2-1 while keeping the Cassette Up Unit in the down position so the mechanism starts loading. (Cassette Down Switch is ON.)

<p style="text-align: center;">CAUTION:</p> <ol style="list-style-type: none">1. After servicing, be sure to remove the Lock Screw.2. The replacement Cassette Up Unit and VCR Mechanism Chassis Ass'y are supplied with a Lock Screw installed. Make sure to remove this Lock Screw when replacing them.
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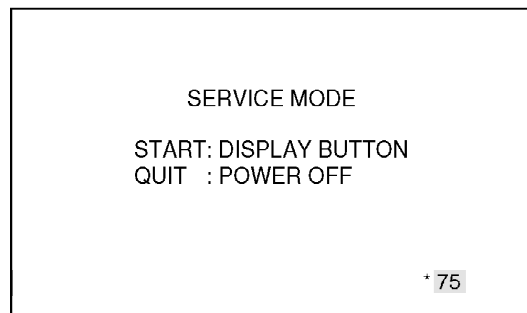
5.1.4. SERVICE MODE SPECIFICATION (SELF-DIAGNOSTIC SYSTEM)

Operation:

1. **Start-up:** Press and hold all of the Display, REC, and Stop buttons over 2 seconds, the unit goes into the self- diagnostic mode and main menu appears.
2. **Mode Selection:** Press display button to change and select self-diagnose mode.
3. **Close:** Turn off the Power Switch.

Display : Following descriptions can be displayed on EVF and TV monitor at the same time.

1. Main Menu



Press and hold all of the Display, REC and Stop buttons over 2 seconds. The Main Menu appears on E.V.F. and TV monitor.

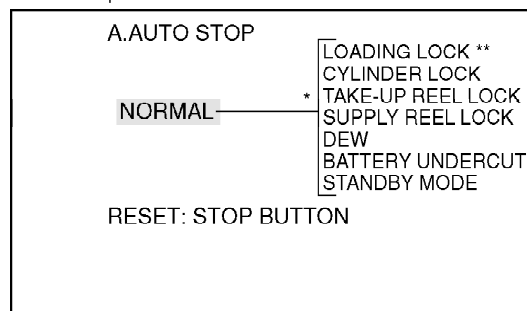
* This figure stands for the Model No. of camcorder as shown.

MODEL NO.	PV-L671	PV-L691
* Figure	75	76



DISPLAY BUTTON

2. Auto Stop



When the unit suddenly shuts off, it is possible to see the cause description in this menu. Even if the AC adaptor or battery is disconnected, the most recent failure will be memorized. Pressing the Stop button at this time will reset the memory.

* Cause descriptions can be displayed until power shuts off.

** LOADING LOCK --- EJECT
STOP
STBY
REC / PB

(When it is possible to detect the lock position, loading lock position can be displayed.)

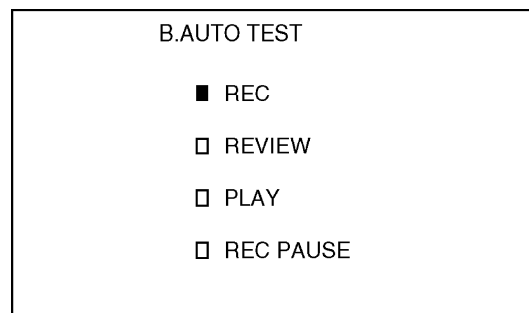


DISPLAY BUTTON

3. Auto Test

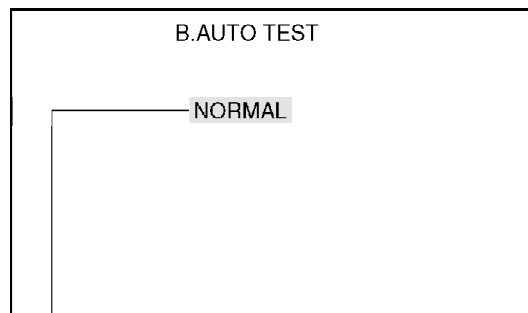


- a. Cassette tape in and press REC button.
- b. The unit operates automatically on tests.



- a. Automatically operates REC (30sec), REVIEW, PLAY, and STOP.
- b. Displays the test status while auto test is progressing.
(■ Mark shows the test status.)





Displays the test result.

LOADING LOCK **
CYLINDER LOCK
* TAKE-UP REEL LOCK
SUPPLY REEL LOCK
DEW
BATTERY UNDERCUT
STANDBY MODE

* Cause descriptions can be displayed until power shuts off.

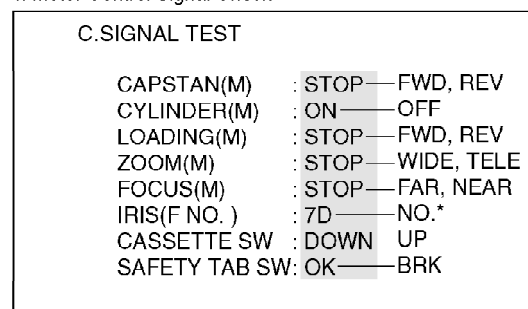
** LOADING LOCK --- EJECT
STOP
STBY
REC / PB

(When it is possible to detect the lock position, loading lock position can be displayed.)



DISPLAY BUTTON

4. Motor Control Signal Check



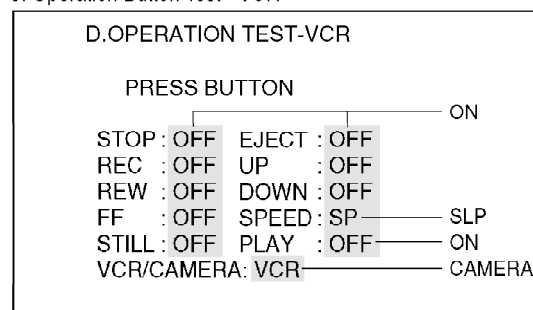
Displays all of motor drive signals and switch inputs from mechanism chassis.

* Iris No. display



DISPLAY BUTTON

5. Operation Button Test - VCR



Tests connection of VCR operation buttons by pressing each button.



DISPLAY BUTTON

6. Operation Button Test - Camera

E.OPERATION TEST-CAMERA

SET VCR/CAMERA SW TO
CAMERA BEFORE CHECK

TELE : OFF	FOCUS : OFF		ON
WIDE : OFF	EIS : OFF		
FADE : OFF	D.ZOOM : OFF		
: OFF	STILL : OFF		
B.L. : OFF	D.SEL : EIS		WIPE

Tests connection of camera operation buttons by pressing each button.



DISPLAY BUTTON

E.OPERATION TEST-CAMERA

SET VCR/CAMERA SW TO
CAMERA BEFORE CHECK

TITLE : OFF	MENU : OFF		ON
: OFF	: OFF		
: OFF	: OFF		
: OFF	: OFF		
: OFF	: OFF		



DISPLAY BUTTON

7. Loading Test

F.LOADING TEST

SET VCR/CAMERA SW
TO VCR

START: REC BUTTON
QUIT : STOP BUTTON

Repeats loading / unloading 10 times without tape to check loading mechanism.



DISPLAY BUTTON

8. Mechanism Position

G.MECHANISM POSITION

■ EJECT

□ STOP STANDBY

□ STANDBY

□ REC/PLAY/FF

Displays mechanism position by monitoring mode switch.
(■ mark shows the current mechanism position.)



DISPLAY BUTTON

9. Safety Defeat

H.SAFETY DEFEAT

SET VCR/CAMERA SW
TO VCR

1.CLOSE CASSETTE DOOR
WITHOUT TAPE

2.PRESS OPERATION
BUTTONS

- Defeats following safety functions. Cylinder lock, Reel lock, End of tape, Battery under cut, Safety tab switch.
- It is possible to check mechanism movement without tape by pressing operation buttons in this mode.

Another Method to put the unit into Safety Defeat mode:
Connect a silicon diode between TP6011 and TP6012 on component side of the Main C.B.A.
Refer to "EXTENSION CABLES FOR SERVICE" in "SERVICE NOTES."



DISPLAY BUTTON

10. Tracking Fix

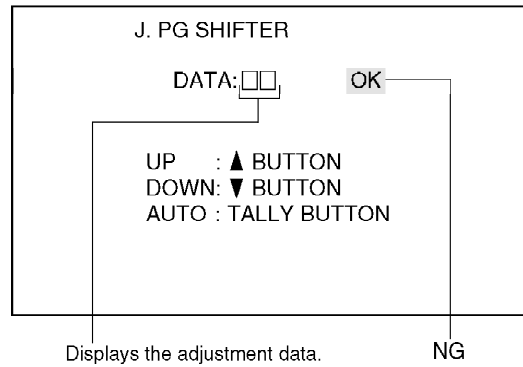
I. TRACKING FIX

Functions to fix tracking position to its center for tape path alignment.



DISPLAY BUTTON

11. PG Shifter



This is a function to adjust Head Switching Position (PG SHIFTER) without using the Personal Computer. Perform adjustment procedure (AUTO) or (MANUAL). To adjust with this function, the TP Board, Audio/Video cable, oscilloscope, and VHS-C Alignment Tape (VFMS0004H6C) are necessary. For connecting TP Board, refer to "HOW TO USE TP BOARD" in SERVICE NOTES.

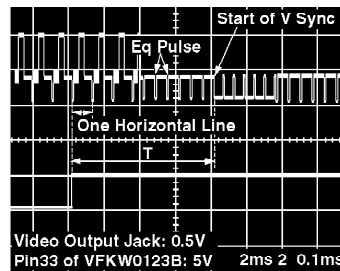
Adjustment procedure (AUTO)

1. Insert the VHS-C Alignment Tape to the camcorder.
2. Press PLAY button.
3. Press TALLY (REC) button while playing back. Head Switching Position (PG SHIFTER) will be adjusted automatically.
4. "OK" indicator will be displayed on EVF.

Note:

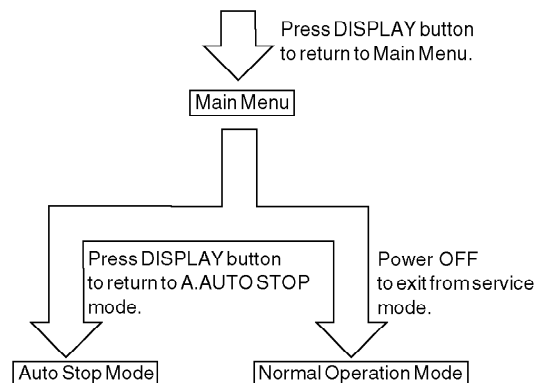
If "NG" indicator is displayed, adjust again.

5. Confirm that T is $6.5 H \pm 0.5 H$ (approx. 0.4 ms) as shown.



Adjustment procedure (MANUAL)

1. Perform steps 1 ~ 2 in Adjustment procedure (AUTO).
2. Press UP ▲ or Down ▼ button while playing back so that T is $6.5 H \pm 0.5 H$ (approx. 0.4 ms).



5.1.5. DESCRIPTION OF EMERGENCY INDICATIONS

When something unusual as shown below occurs, LED begins flashing for approx. 15 seconds to indicate an Emergency before the camcorder shuts off.

No.	Information	POWER LED	Cause and Characteristic
①	Takeup-Reel Lock	●	There is no TAKEUP REEL sensor pulse for 2.3 seconds (PLAY, REC) or 0.7 second (CUE, REVIEW, FF, REW).
②	Battery Under Cut or DEW	⊗	When the Battery voltage drops to 5.3 V. Or excessive moisture condenses in the Unit.

NOTE :

- : Indicates LED Flashing at 3 Hz rate (duty 50%)
- ⊗ : Indicates LED Flashing at 0.8 Hz rate (duty 50%)

5.1.6. METHOD FOR LOADING/UNLOADING OF MECHANISM

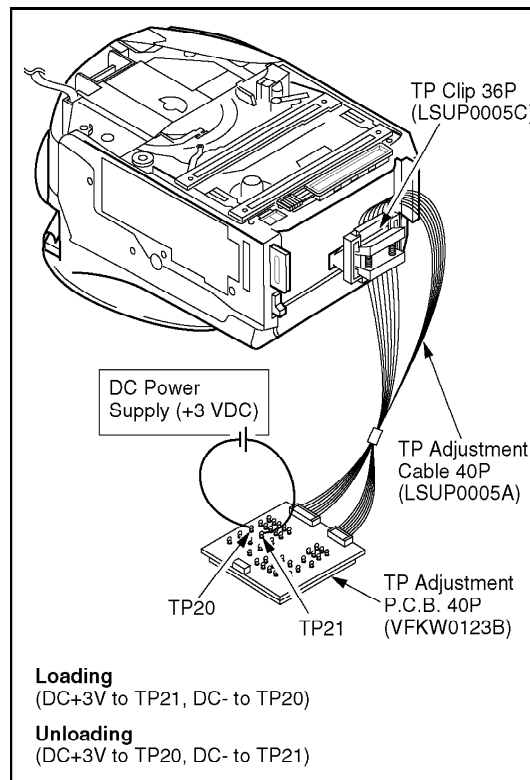
5.1.6.1. (Electrical Method)

CAUTION:

If loading does not start after DC Power Supply is applied, DO NOT continue to applying DC Power Supply.

Connect the TP Board as shown, and apply 3 VDC Power Supply (DC+ to TP21, DC- to TP20 for loading or DC+ to TP20, DC- to TP21 for unloading). Refer to "**HOW TO USE TP BOARD.**" It normally takes approx. 6 seconds to unload the Mechanism from fully-loaded position to EJECT position.

Fig. 3-1

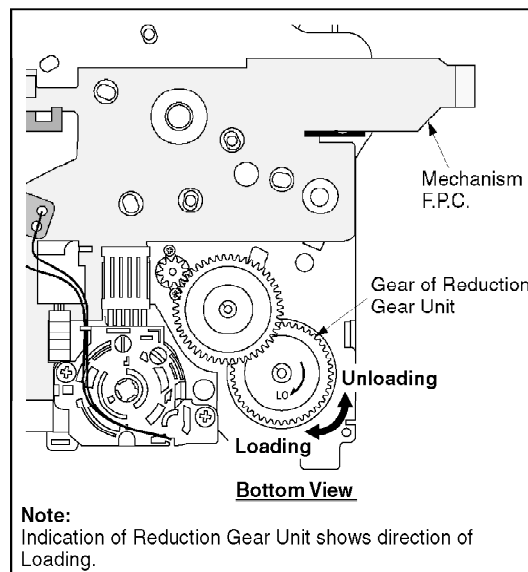


5.1.6.2. (Manual Method) without Cabinet Parts

Turn the Gear of Reduction Gear Unit clockwise (for loading) or counterclockwise (for unloading) manually.

It is necessary to rotate approx. 80 times from fully-loaded position to EJECT position.

Fig. 3-2



5.1.7. HOW TO REMOVE A JAMMED TAPE

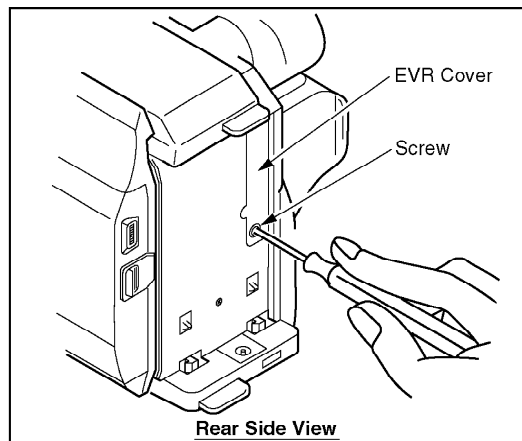
CAUTION:

If loading does not start after DC Power Supply is applied, DO NOT continue applying DC Power Supply.

Remove a jammed tape as follows:

1. Remove a Screw and remove the EVR Cover.

Fig. 4-1



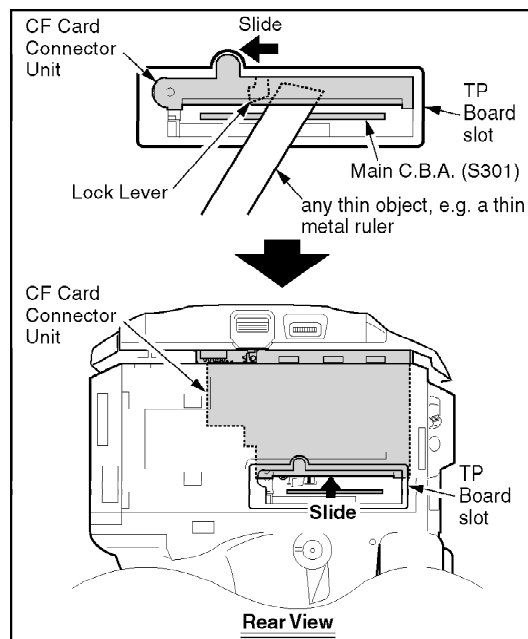
2. Place the unit with the Cassette Cover facing upward.
3. Slide the Lock Lever through TP Board slot to open the Cassette Cover slightly. Then, slide the CF Card Connector Unit so that the TP Board can connect to Main C.B.A. (S301) as shown. (Hold the Cassette Cover slightly downward.)

Note:

Do not fully open the Cassette Cover. Otherwise, the cassette tape

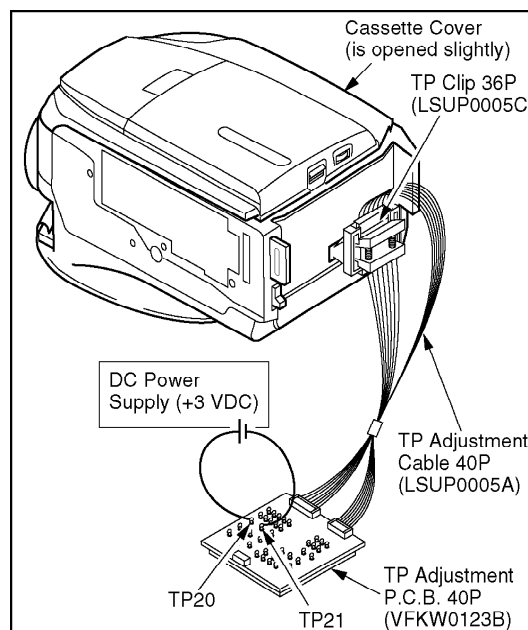
may be damaged.

Fig. 4-2



4. Connect the TP Board through the TP Board slot.
5. Apply +3 VDC Power Supply to TP20 (+) and TP21 (-) on the TP Board to unload the mechanism. It normally takes approx. 6 seconds to unload the Mechanism to EJECT position. Then, remove the Power Supply and remove the TP Board.

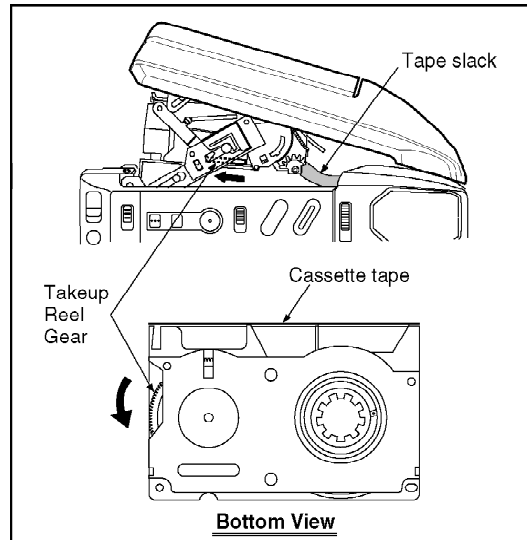
Fig. 4-3



6. Open the Cassette Cover fully.

7. Remove the tape slack by rotating the Takeup Reel Gear of the cassette tape as shown in Fig. 4-4.

Fig. 4-4



8. Take out the cassette tape.
9. Connect the Power or Battery to set the Mechanism to STOP Position.

5.1.8. HOW TO USE TP BOARD

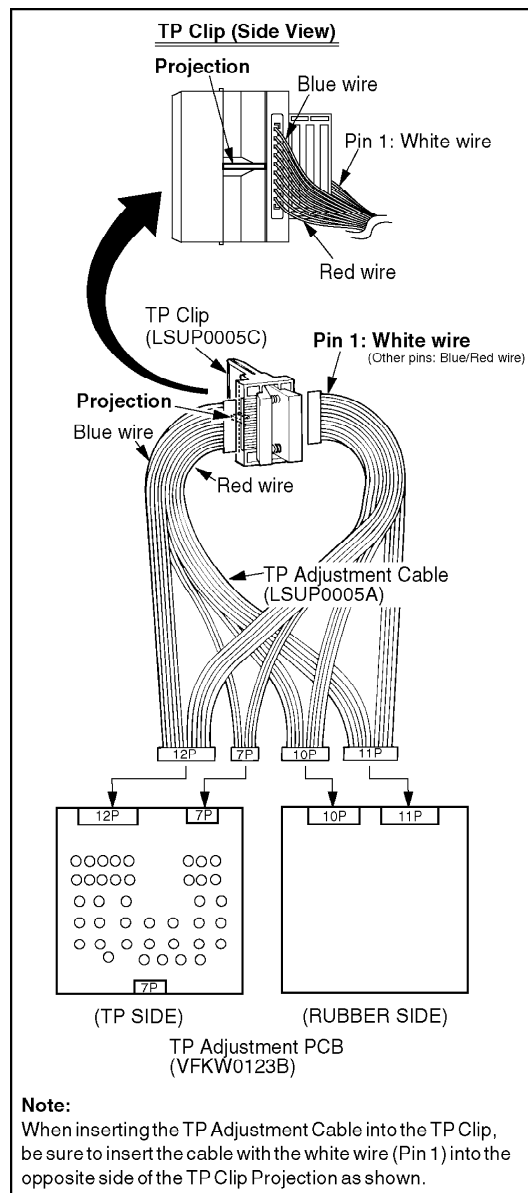
5.1.8.1. TP Board is required when:

1. performing "Tape Interchangeability Adjustment."
2. performing "PC-EVR Adjustment."
3. the cassette tape is jammed. Refer to "[HOW TO REMOVE A JAMMED TAPE.](#)"
4. loading or unloading the Mechanism (Electrical Method).
5. performing a signal check

5.1.8.2. How to assemble TP Board:

1. Assemble the TP Board as shown.

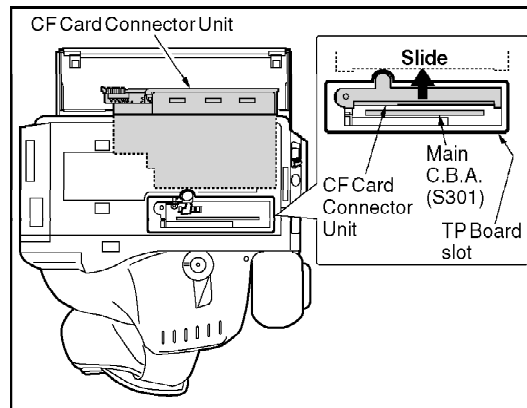
Fig. 5-1



5.1.8.3. How to connect TP Board to Camcorder:

1. Remove a Screw and remove the EVR Cover. Then, open the Cassette Cover by sliding the EJECT button with Power ON, or sliding the Lock Lever through TP Board slot. Remove the Cassette Cover for "Tape Interchangeability adjustment," OR release only 2 Locking Tabs (L-1) of the Cassette Cover for "EVR Adjustment." Refer to "**CABINET SECTION**" in DISASSEMBLY/ASSEMBLY PROCEDURES.
2. Slide the CF Card Connector Unit as shown.

Fig. 5-2

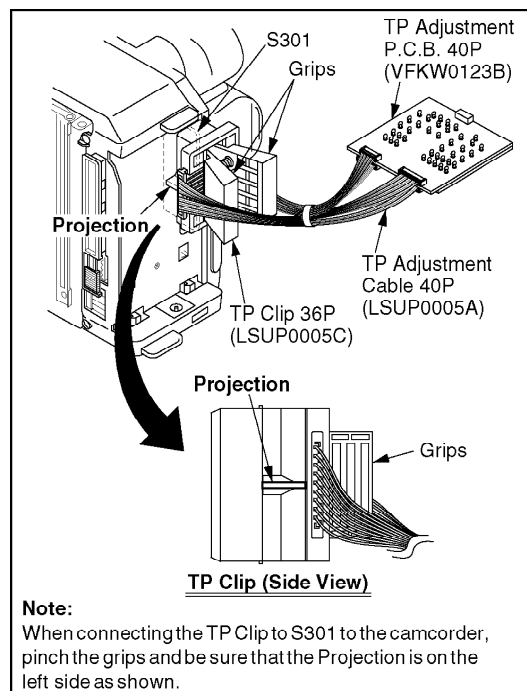


3. Install the Lock Screw to the Cassette Up Unit to use the cassette tape.

Refer to "HOW TO HOLD THE CASSETTE UP UNIT IN THE DOWN POSITION WITHOUT CASSETTE COVER INSTALLED."

4. Connect the TP Board to Camcorder as shown.

Fig. 5-3



5.1.8.4. Signal description on TP Adjustment P.C.B. 40P (VFKW0123B)

Fig. 5-4-1

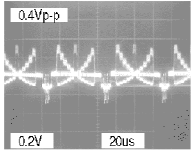
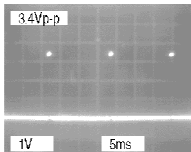
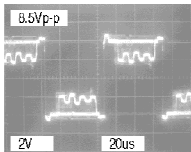
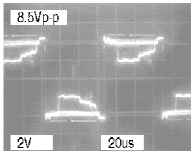
Pin No.	Signal Name	Description	Waveforms
1	GND	Grounding terminal	-----
2	IRIS	To monitor IRIS at Pin 33 of IC605 on Main C.B.A.	 <p>0.4Vp-p 0.2V 20us</p> <p>Camera Mode (Gray Scale Chart)</p>
3	GND	Grounding terminal	-----
4	Not used	-----	-----
5	Not used	-----	-----
6	EVR MODE (L)	EVR mode select: low	-----
7	CAM +4.5V	Power terminal	-----
8	EVR SERIAL DATA 1	Serial data output from PC to camcorder	-----
9	V-SYNC	To monitor V sync signal at Pin 18 of IC602 on Main C.B.A.	 <p>3.4Vp-p 1V 5ms</p> <p>Camera Mode</p>
10	EVR SERIAL DATA 0	Serial data output from camcorder to PC	-----
11	CAMERA RESET (L)	Camera microcontroller reset: low	-----
12	Not used	-----	-----
13	EVR SERIAL CLOCK	Serial clock between PC and camcorder	-----
14	Not used	-----	-----
15	Not used	-----	-----
16	Color EVF-Blue	To monitor Color EVF blue signal at Pin 11 of IC901 on Color EVF C.B.A.	 <p>8.5Vp-p 2V 20us</p> <p>Rec/PB Mode (Color Bar Chart)</p>
17	Color EVF-Green	To monitor Color EVF green signal at Pin 14 of IC901 on Color EVF C.B.A.	 <p>8.5Vp-p 2V 20us</p> <p>Rec/PB Mode (Color Bar Chart)</p>

Fig. 5-4-2

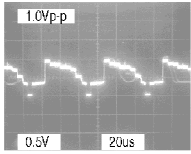
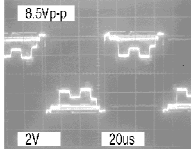
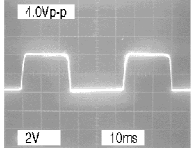
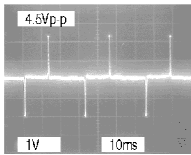
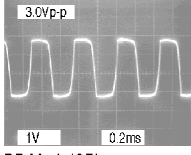
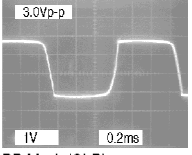
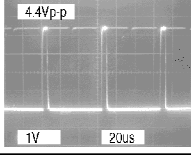
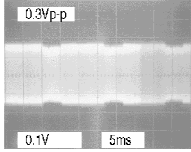
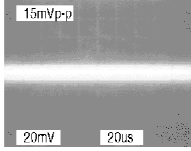
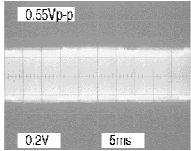
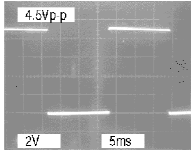
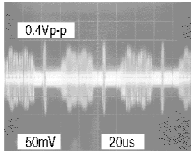
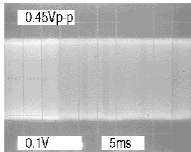
Pin No.	Signal Name	Description	Waveforms
18	LUMINANCE	To monitor luminance signal at Pin 78 of IC301 on Main C.B.A.	 <p>Camera Mode (Color Bar Chart)</p>
19	Color EVF-R	To monitor Color EVF red signal at Pin 16 of IC901 on Color EVF C.B.A.	 <p>Rec/PB Mode (Color Bar Chart)</p>
20	LOADING MOTOR 0	To monitor supply voltage to loading motor (+4.5V or GND)	-----
21	LOADING MOTOR 1	To monitor supply voltage to loading motor (+4.5V or GND)	-----
22	SUPPLY REEL PULSE	To monitor supply reel pulse at Pin 80 of IC6001 on Main C.B.A.	
23	Not used	-----	-----
24	Not used	-----	-----
25	PB CTL PULSE	To monitor PB control pulse at Pin 76 of IC6001 on Main C.B.A.	 <p>PB Mode</p>
26	SUPPLY PHOTO TR (L)	To monitor Supply Photo TR signal (TR on: low)	-----
27	CAP FG	To monitor capstan FG signal at Pin 67 of IC6001 on Main C.B.A. (SP: 2155Hz, SLP: 719Hz)	  <p>PB Mode(SP) PB Mode(SLP)</p>
28	Not used	-----	-----
29	H-SYNC	To monitor H sync signal at Pin 61 of IC3001 on Main C.B.A. (In EVR adjustment mode, 629kHz carrier appears.)	 <p>Rec/PB Mode</p>

Fig. 5-4-3

Pin No.	Signal Name	Description	Waveforms
30	PB LUMINANCE	To monitor PB luminance signal at Pin 23 of IC3001 on Main C.B.A.	 PB Mode
31	YNR	To monitor YNR error signal at Pin 21 of IC3001 on Main C.B.A.	 PB Mode
32	ENVELOPE	To monitor PB envelope signal at Pin1 of FP6 on Main C.B.A.	 PB Mode
33	HEAD SW	To monitor head switching signal at Pin 23 of IC6001 on Main C.B.A.	 PB Mode
34	Not used	-----	-----
35	GND	Grounding terminal	-----
36	GND	Grounding terminal	-----
37	REC CHROMINANCE	To monitor recording chrominance signal at Pin 38 of IC3001 on Main C.B.A.	 Rec Mode
38	REC LUMINANCE	To monitor recording luminance signal at Pin 27 of IC3001 on Main C.B.A.	 Rec Mode
39	Not used	-----	-----
40	Not used	-----	-----

5.1.9. EEPROM DATA

CAUTION:

Be sure to save the EEPROM data using PC-EVR Adjustment Program before service and adjustment in order to make sure to avoid an accidental data loss, etc. as follows.

EEPROM IC

C.B.A.	EEPROM IC Ref. No.
Main C.B.A.	IC306

How to save the EEPROM data to your PC

- 1. Start up the PC-EVR Adjustment Program.**
- 2. Select "1. Read (Save)/Write All EEPROM datas." in Main menu,**

and then press "Enter" key.

3. Select "1. Save all data of EEPROM" in Read (Save)/Write All EEPROM datas menu, and then press "Enter" key.
4. Input the File name, and then press "Enter" key. The data of EEPROM IC will be stored to your PC.

How to write the EEPROM data which was stored in your PC to EEPROM IC

When it becomes impossible to adjust during service and adjustment, write the EEPROM data which was stored in your PC to EEPROM IC as follows. And readjust the camcorder.

1. Start up the PC-EVR Adjustment Program.
2. Select "1. Read (Save)/Write All EEPROM datas." in Main menu, and then press "Enter" key.
3. Select "2. Data write using stored file" in Read (Save)/Write All EEPROM datas menu, and then press "Enter" key.
4. Input the saved file name, and then press "Enter" key. The data will be written in EEPROM IC.

How to initialize the EEPROM IC

When the EEPROM IC (IC306) or Main C.B.A. is replaced, be sure to write the initial data to EEPROM IC. And adjust the camcorder.

1. Start up the PC-EVR Adjustment Program.
2. Select "1. Read (Save)/Write All EEPROM datas." in Main menu, and then press "Enter" key.
3. Select "3. Data write with initial data" in Read (Save)/Write All EEPROM datas menu, and then press "Enter" key. And press "Enter" key once again. The initial data will be written in EEPROM IC.

5.1.10. HOW TO ACCESS THE MANUAL TRACKING CONTROL

Press the UP▲(Tracking Up) or Down▼(Tracking Down) button to perform the Manual Tracking Adjustment in Playback Mode.

5.1.11. REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENT

The following procedures are recommended for the replacement of the leadless components used in this Unit.

1. Preparation for replacement

A. Soldering Iron

Use a pencil-type soldering iron using less than 30 watts.

B. Solder

Eutectic Solder (Tin 63 %, Lead 37 %) is recommended.

C. Soldering time

Do not apply heat for more than 4 seconds.

D. Preheating

**Leadless capacitor must be preheated before installation.
(130 °C ~ 150 °C, for about 2 minutes.)**

Note:

A. Leadless component must not be reused after removal.

B. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

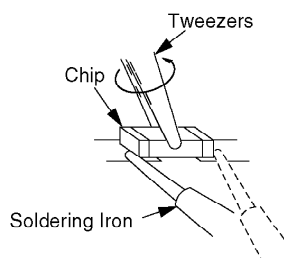
Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove leadless component with a twisting motion.

Note:

A. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action. The leadless component is attached to the PCB with glue. So carefully twist the component when removing it so as not to break or damage any foil under the component.

B. Take care not to break the copper foil on the printed board.

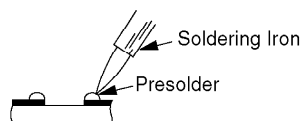
Fig. 6-1



3. Installation of the leadless component

A. Presolder the contact points of the circuit board.

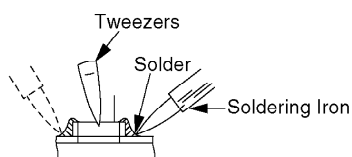
Fig. 6-2



B. Press the part downward with tweezers and solder both

electrodes as shown below.

Fig. 6-3



Note:

Do not glue the replacement leadless component to the circuit board.

5.1.12. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

5.1.13. MODEL NO. IDENTIFICATION MARK

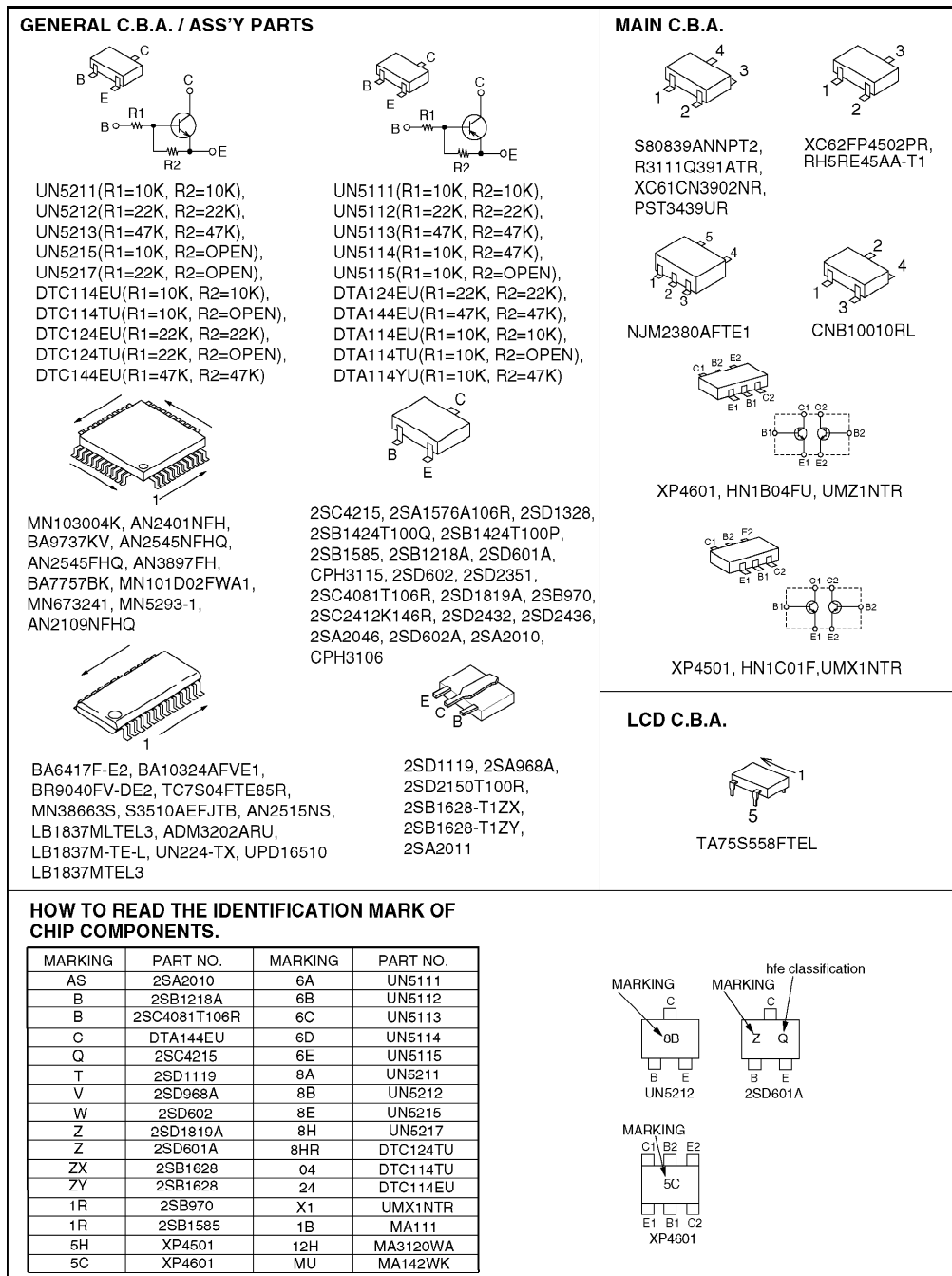
Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

MODEL	MARK
PV-L671	A
PV-L691	B
NOT USED	Z

Note:

Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for Mark "Z."

5.2. IC, TRANSISTOR AND CHIP PART INFORMATION



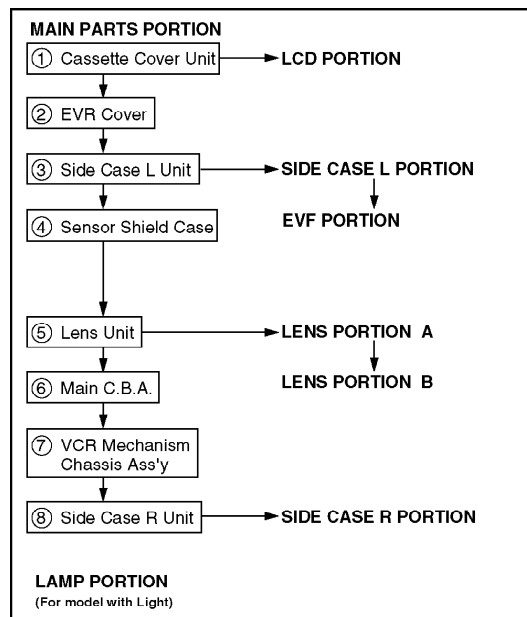
6. DISASSEMBLY/ASSEMBLY PROCEDURES

6.1. CABINET SECTION

6.1.1. Disassembly Flowchart

This flow chart indicates the disassembly steps of the cabinet parts and the P.C.Boards in order to gain access to item (s) to be serviced. When reassembling, perform the step (s) in the reverse order. Bend, route and dress the wires as they were originally.

Fig. D1



Note :

- 1. When removing the cabinet, work with care so as not to break the Locking Tabs.**
- 2. Place a cloth or some other soft material under the P.C. Boards or Unit to prevent damage.**
- 3. When reinstalling, ensure that the connectors are connected and electrical components have not been damaged.**
- 4. Do not supply power to the unit during disassembly and reassembly.**

6.1.2. MAIN PARTS PORTION

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	Cassette Cover Unit	D2	2(L-1), (L-2), FP9101
②	EVR Cover	D3	⑥17
③	Side Case L Unit	D3	4 ⑤39, ⑤88, 3 ⑥14, Top Operation receptacle, P3, P38
④	Sensor Shield Case	D4	⑤14
⑤	Lens Unit	D4	2 ⑤88, (L-3), FP8, FP9
⑥	Main C.B.A.	D5	2 ④21, ④73, FP1, FP2, FP3, FP6, FP7, FP10, FP11, FP13
⑦	VCR Mechanism Chassis Ass'y	D6	2 ④73, ⑤39
⑧	Side Case R Unit	D6	-----

↑
A

↑
B

↑
C

↑
D

How to read chart shown above:

A: Order of Procedure steps.

When reassembling, perform steps(s) in reverse order. These numbers are also used as the identification (location) No. of parts in Figures.

B: Part to be removed or installed.

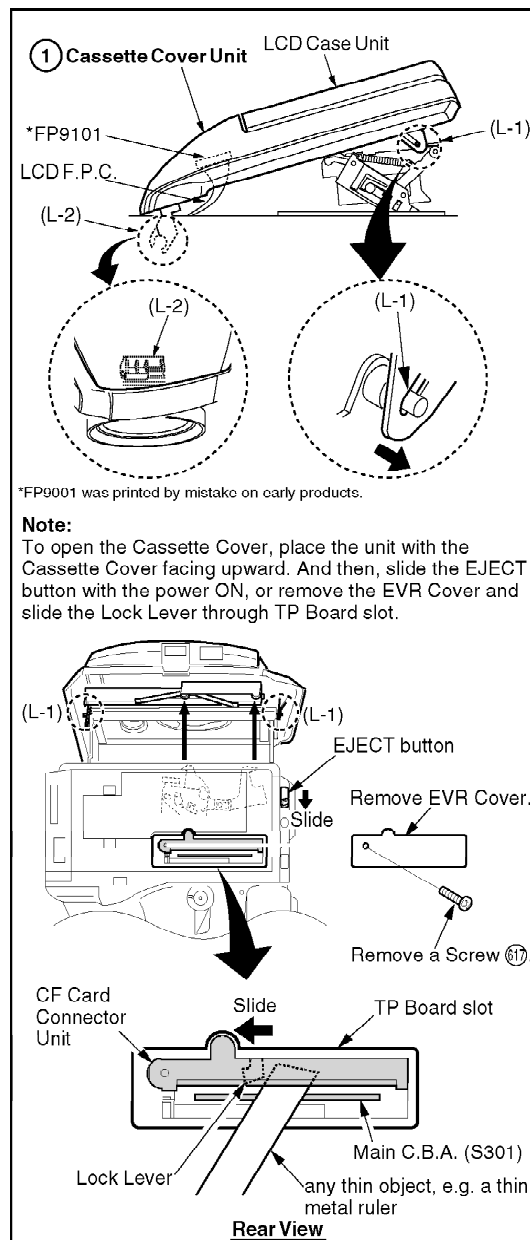
C: Fig. No. showing Procedure or Part Location.

D: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.

2(L-1) = 2 Looking Tabs (L-1)

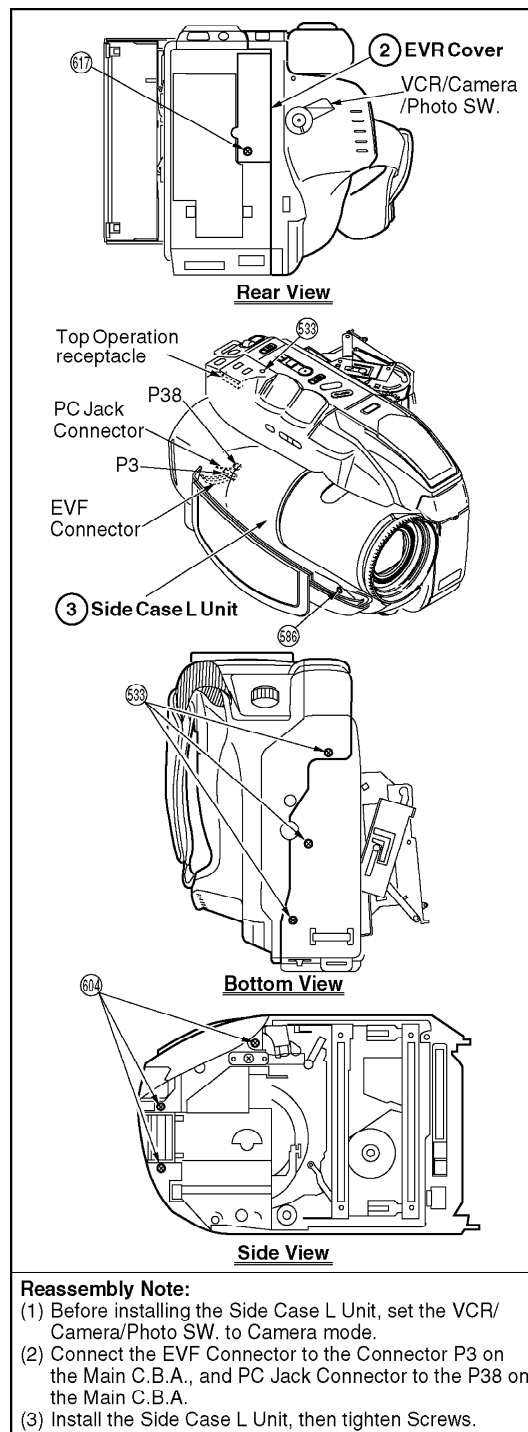
6.1.2.1. Cassette Cover Unit

Fig. D2



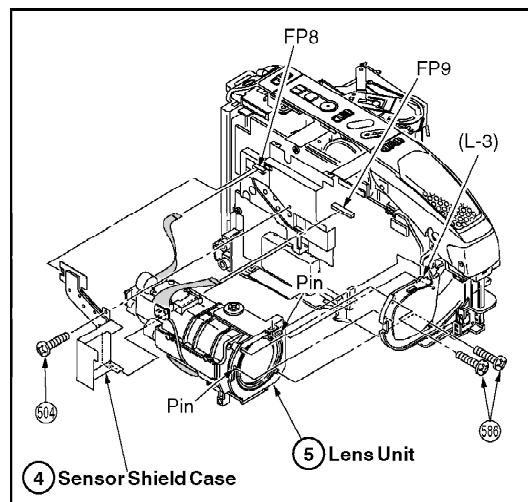
6.1.2.2. EVR Cover, Side Case L Unit

Fig. D3



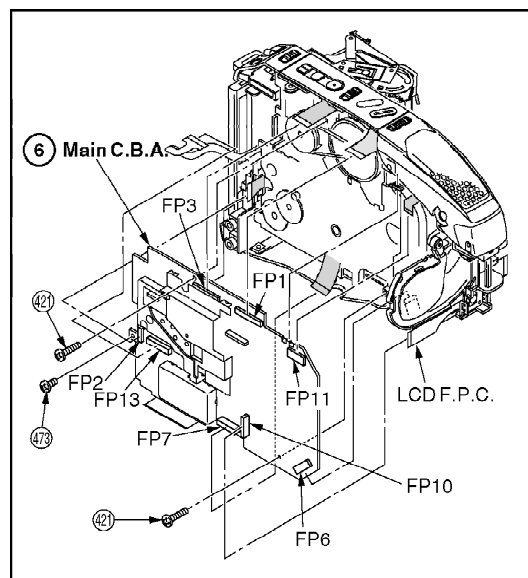
6.1.2.3. Sensor Shield Case, Lens Unit

Fig. D4



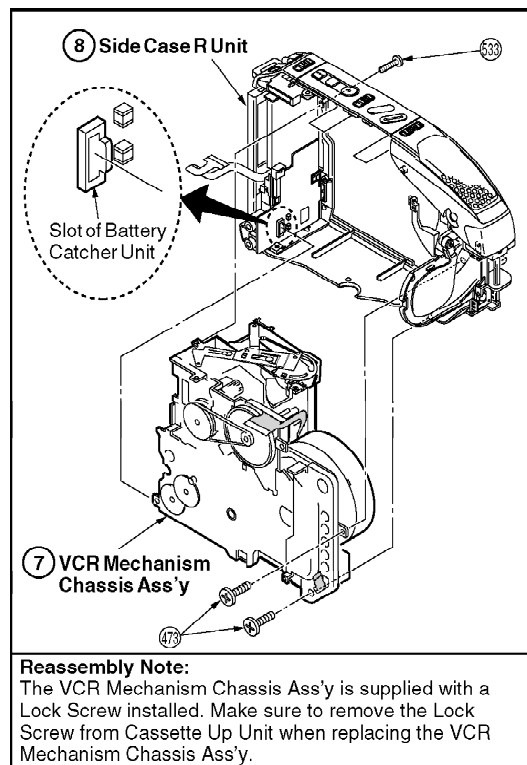
6.1.2.4. Main C.B.A.

Fig. D5



6.1.2.5. VCR Mechanism Chassis Ass'y, Side Case R Unit

Fig. D6

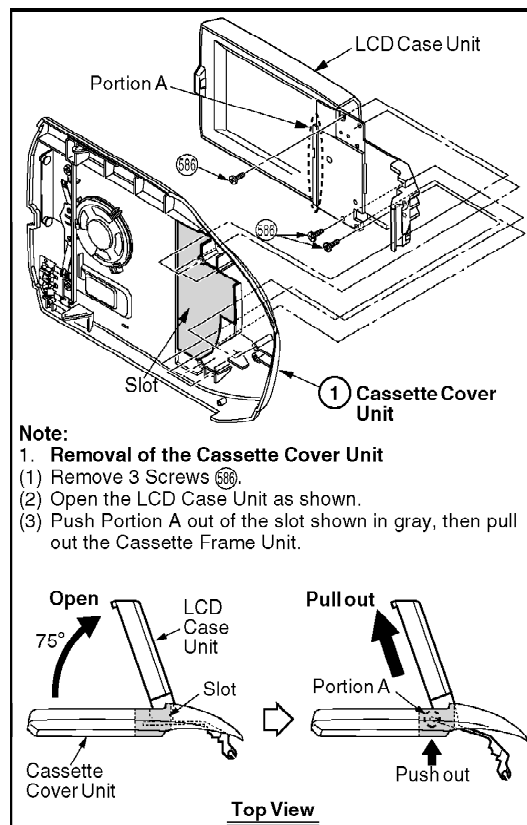


6.1.3. LCD PORTION

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	Cassette Cover Unit	D7-1	3 ⑥⑧
②	Relay C.B.A.	D7-2	2(L-1), FP9102
③	Cassette Frame	D7-2	2 ⑥⑧
④	LCD Case A Unit	D7-3	2 ④⑨, 5(L-2)
⑤	LCD Shaft Unit	D7-4	FP1201
⑥	LCD Case B	D7-4	2 ⑥⑩, (L-3), ESD Plate
⑦	LCD C.B.A.	D7-5	FP9002, Unsolder
⑧	LCD Panel Unit	D7-5	8(L-4)
⑨	LCD Lamp Unit	D7-6	3(L-5), LCD Sheet Unit

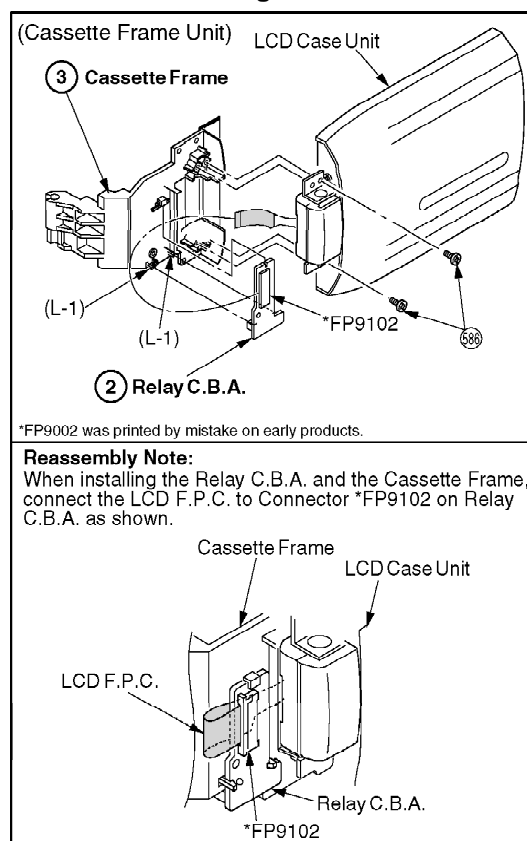
6.1.3.1. Cassette Cover Unit

Fig. D7-1



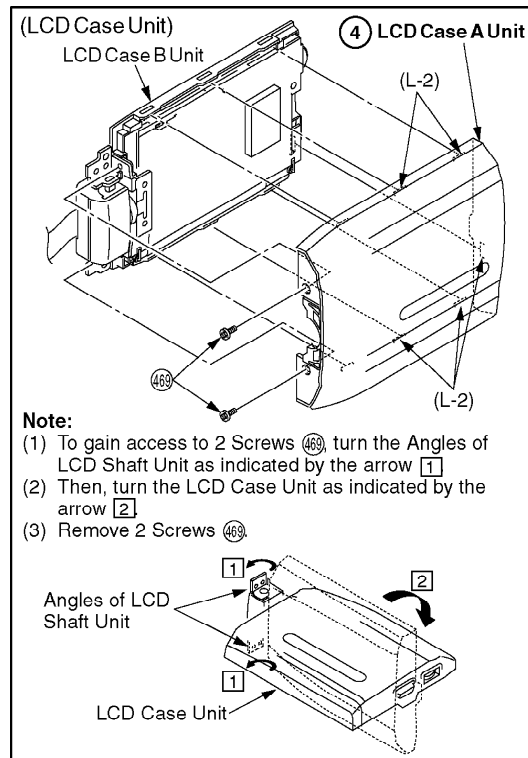
6.1.3.2. Relay C.B.A., Cassette Frame

Fig. D7-2



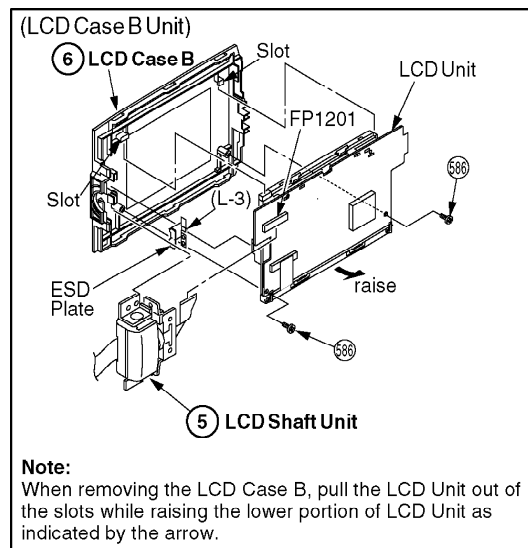
6.1.3.3. LCD Case A Unit

Fig. D7-3



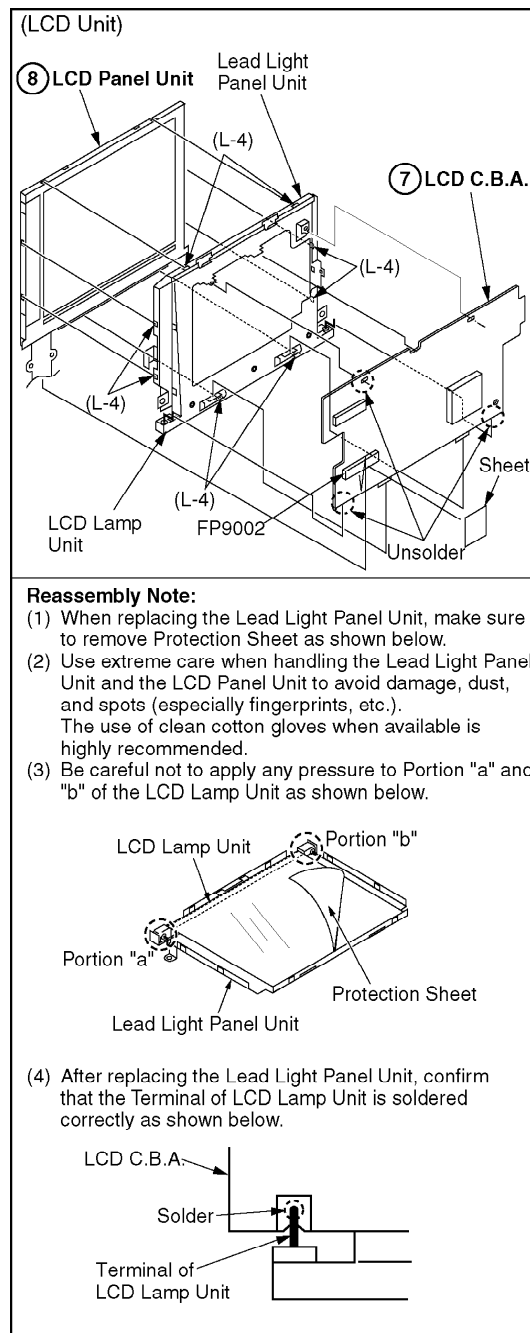
6.1.3.4. LCD Shaft Unit, LCD Case B

Fig. D7-4



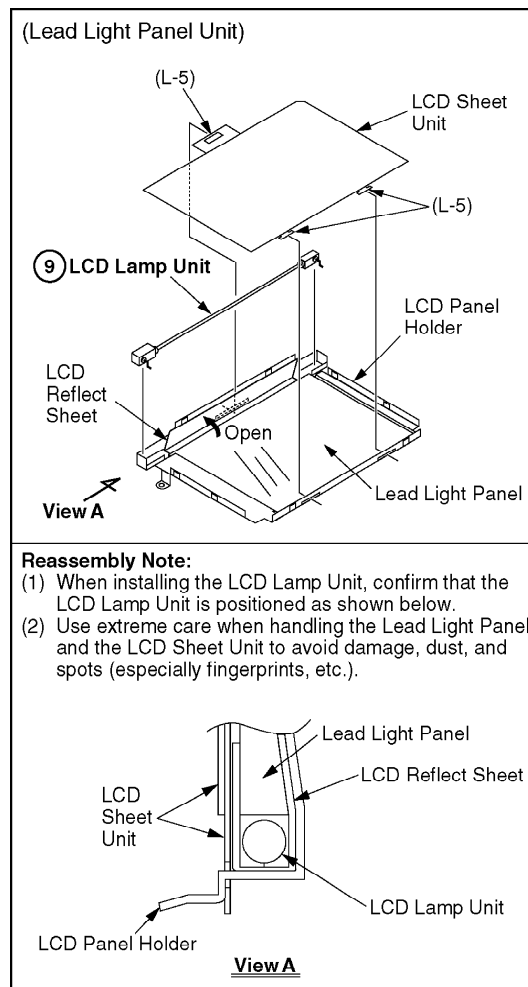
6.1.3.5. LCD C.B.A., LCD Panel Unit

Fig. D7-5



6.1.3.6. LCD Lamp Unit

Fig. D7-6

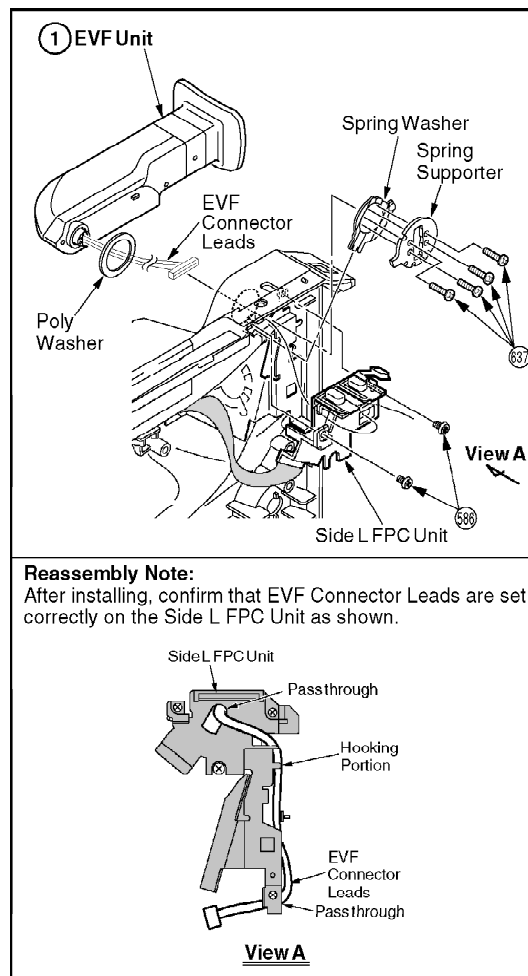


6.1.4. SIDE CASE L PORTION

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	EVF Unit	D8-1	2 ⑥⑥, 4 ⑥⑦, Spring Supporter, Spring Washer, Poly Washer
②	Side L FPC Unit	D8-2	4 ⑥⑥, 2(L-1), Arm, Arm Holder
③	PC Jack C.B.A.	D8-3	2 ⑥⑥

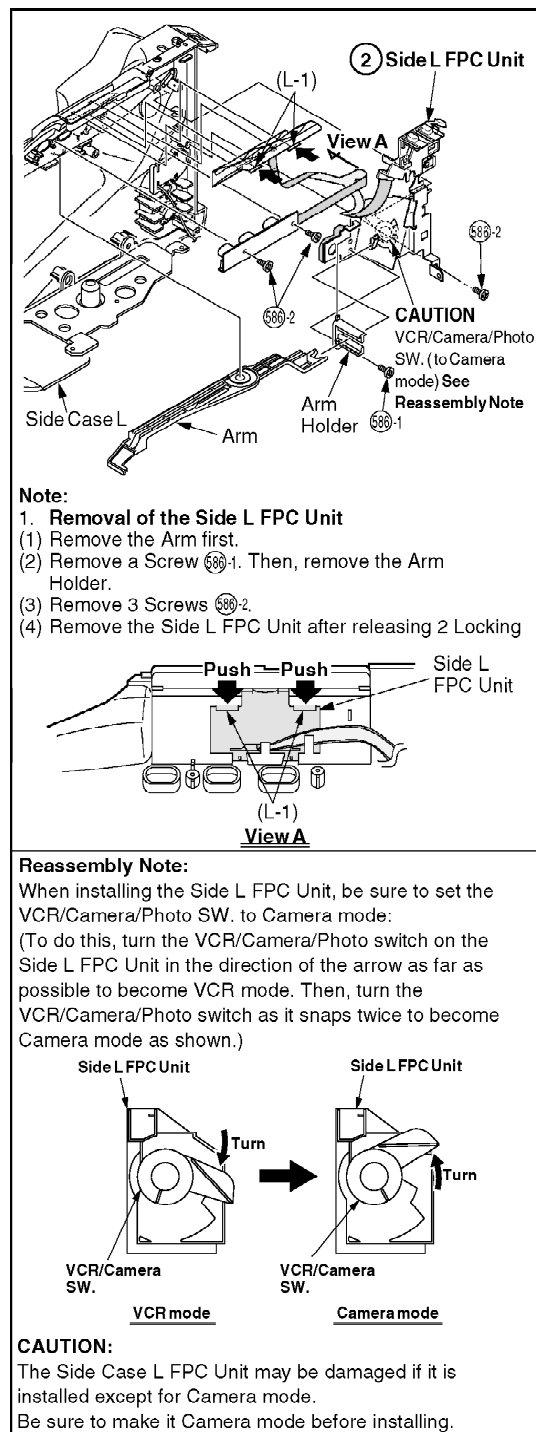
6.1.4.1. EVF Unit

Fig. D8-1



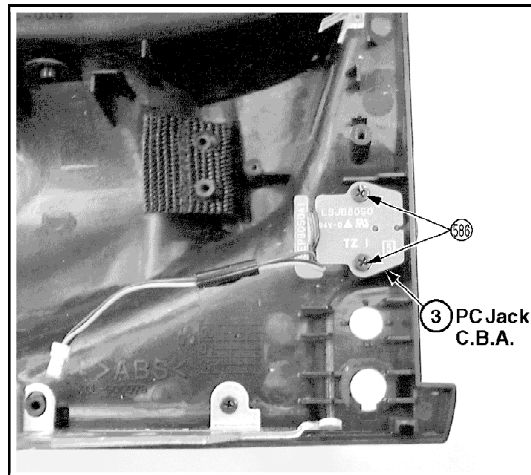
6.1.4.2. Side L FPC Unit

Fig. D8-2



6.1.4.3. PC Jack C.B.A.

Fig. D8-3



6.1.5. EVF PORTION

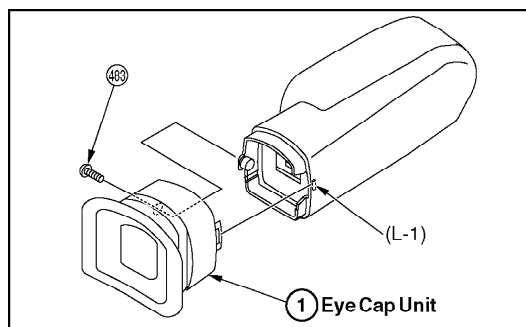
STEP /LOC. No.	PART	Fig. No.	REMOVE
①	Eye Cap Unit	D9-1	④⑧, (L-1)
②	EVF Case A	D9-2	2 ④⑧, 5(L-2)
③	EVF Dust Cover	D9-2	-----
④	EVF Case B	D9-2	-----
⑤	VCR Operation Unit	D9-3	FP901
⑥	CRT	D9-3	CRT Socket Unit
⑦	Deflection Yoke	D9-3	P903
⑧	EVF C.B.A.	D9-3	-----

Note:

When disassembling or reassembling, make sure that no dust gets in EVF Unit.

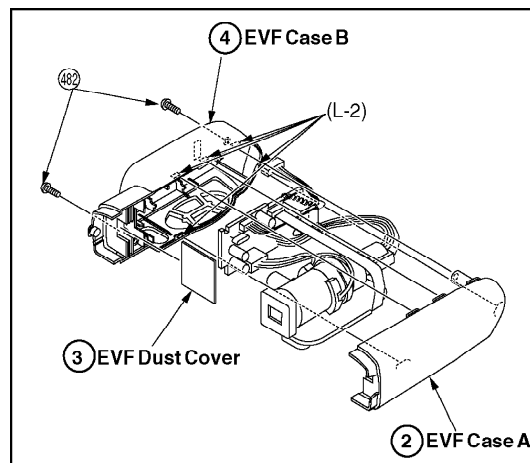
6.1.5.1. Eye Cap Unit

Fig. D9-1



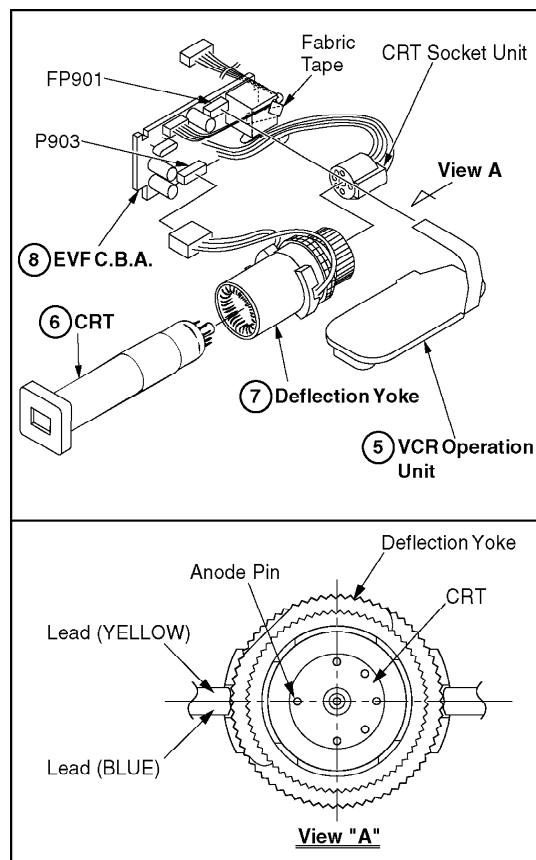
6.1.5.2. EVF Case A, EVF Dust Cover, EVF Case B

Fig. D9-2



6.1.5.3. VCR Operation Unit, CRT, Deflection Yoke, EVF C.B.A.

Fig. D9-3



6.1.6. LENS PORTION A

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	CCD C.B.A.	D11-1	2602
②	Filter Rubber	D11-1	-----
③	Optical Filter	D11-1	-----
④	Optical Filter Stopper	D11-1	-----
⑤	IR Cut Filter	D11-1	-----

6.1.6.1. CCD C.B.A., Filter Rubber, Optical Filter, Optical Filter Stopper, IR Cut Filter

Fig. D11-1

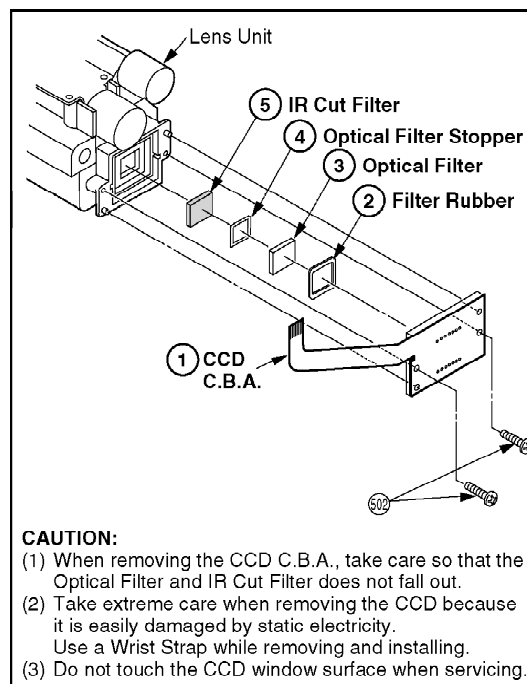


Fig. D11-2

Reassembly Note:**1. Installation of IR Cut Filter, Optical Filter Stopper, Optical Filter, Filter Rubber, CCD C.B.A.**

Install in order shown below.

- (1) Install the IR Cut Filter in the Lens Unit correctly.

Note:

Make sure that no dust gets on the IR Cut Filter and in the Lens Unit. Clean the IR Cut Filter with lens cleaning paper dampened with lens cleaner if necessary.

- (2) Install the Optical Filter Stopper on the IR Cut Filter correctly as shown below.

Note:

Make sure that no dust gets on the Optical Filter Stopper.

- (3) Install the Optical Filter on the Optical Filter Stopper correctly as shown below.

Note:

Make sure that no dust gets on the Optical Filter and in the Lens Unit. Clean the Optical Filter with lens cleaning paper dampened with lens cleaner if necessary.

- (4) Install the Filter Rubber on the Optical Filter correctly as shown below.

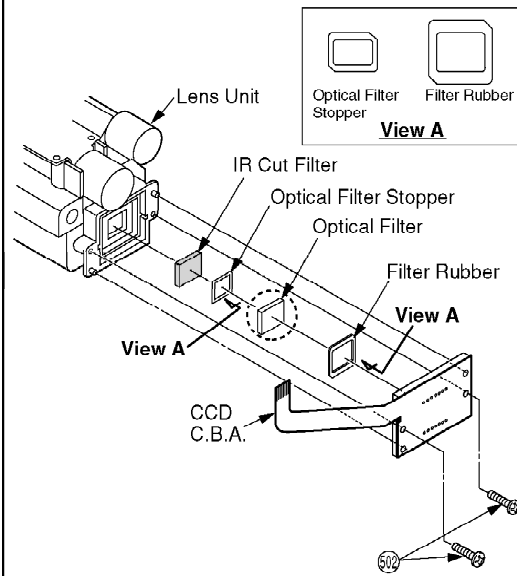
Note:

Make sure that no dust gets on the Filter Rubber.

- (5) Install the CCD C.B.A. to the Lens Unit. Then, secure 2 Screws (602) while keeping the CCD C.B.A. pressed toward the upper right corner.

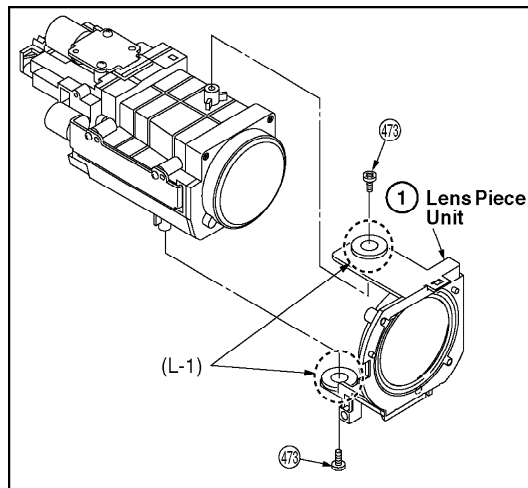
Note:

Do not touch the Lens Surface. Clean their surface with lens cleaning paper dampend with lens cleaner

**6.1.7. LENS PORTION B**

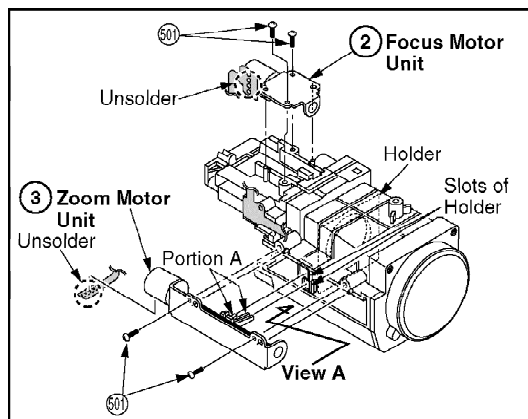
STEP /LOC. No.	PART	Fig. No.	REMOVE
①	Lens Piece Unit	D12-1	2 (473), 2 (L-1)
②	Focus Motor Unit	D12-2	2 (601), Unsolder
③	Zoom Motor Unit	D12-2	2 (601), Unsolder

6.1.7.1. Lens Piece Unit**Fig. D12-1**



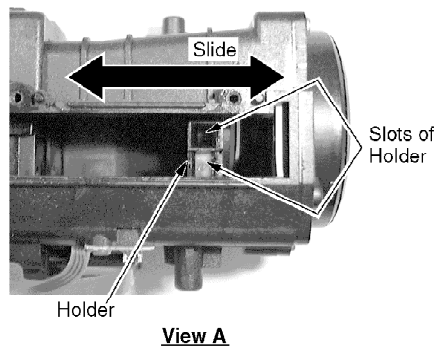
6.1.7.2. Focus Motor Unit, Zoom Motor Unit

Fig. D12-2



Reassembly Note:

When installing the Zoom Motor Unit, install so that the Portion A of Zoom Motor Unit is inserted to Slots of Holder by sliding the Holder.

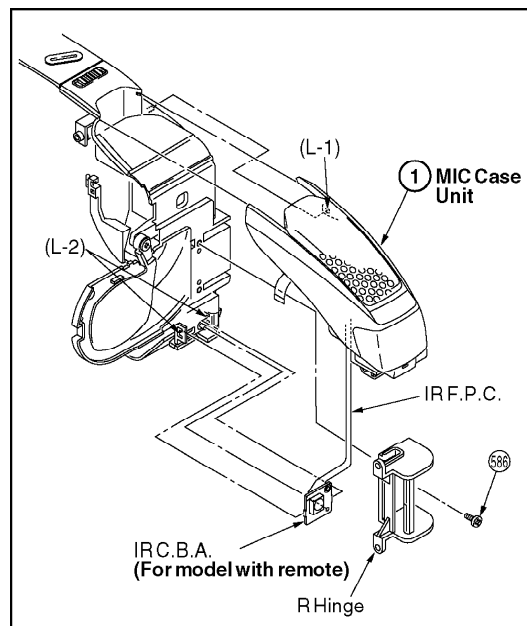


6.1.8. SIDE CASE R PORTION

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	MIC Case Unit	D13-1	⑤⑧, (L-1), 2(L-2), R Hinge
②	Top Operation Unit	D13-2	④⑦, (L-3)
③	CF Card Connector Unit	D13-3	-----
④	Battery Catcher Unit	D13-4	⑤⑧, Backup Cover, Battery

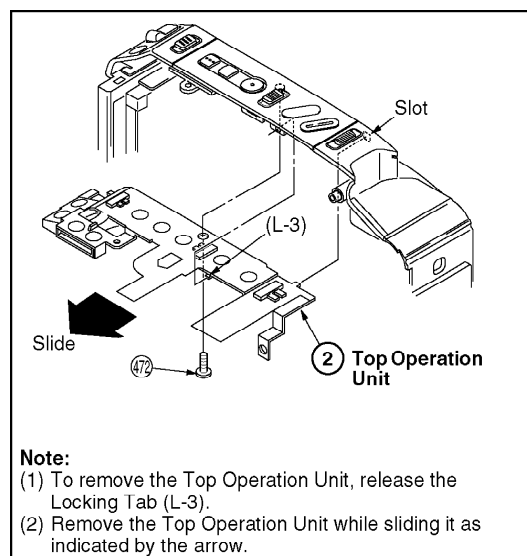
6.1.8.1. MIC Case Unit

Fig. D13-1



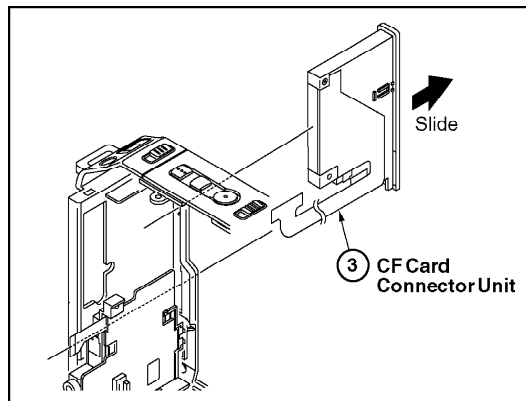
6.1.8.2. Top Operation Unit

Fig. D13-2



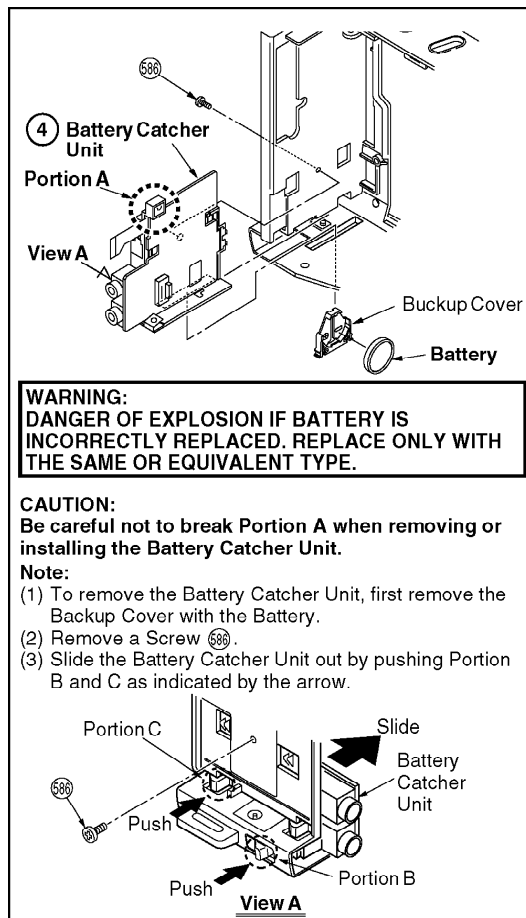
6.1.8.3. CF Card Connector Unit

Fig. D13-3



6.1.8.4. Battery Catcher Unit

Fig. D13-4



6.1.9. LAMP PORTION

(For model with Light)

DANGER:
When replacing the Lamp, use only Lamp (Part No. VLLW0015) supplied by Panasonic to reduce the risk of fire. Use a cloth or tissue when handling the Lamp as finger oils will decrease the Lamp life. To prevent possible burn hazard, remove the Light Cover and allow the Lamp to cool before replacing.

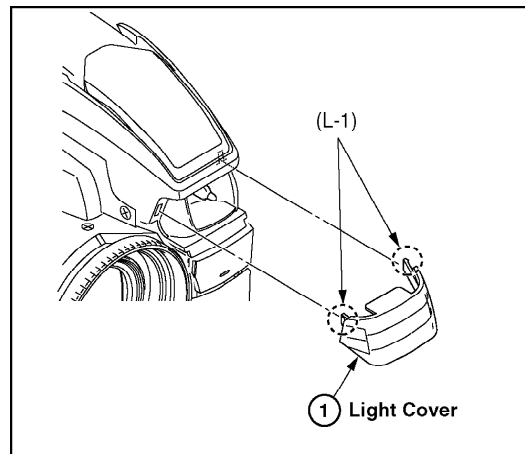
Note:

1. Lamp is supplied as a Lamp Kit only (Kit No. VULS0001) which contains Lamp, Cushions, and Explanation Sheet.
2. For more details of the Lamp replacement, refer to the Explanation Sheet in the Lamp Kit (VULS0001).

STEP /LOC. No.	PART	Fig. No.	REMOVE
①	Light Cover	D14-1	2(L-1)
②	Lamp	D14-2	-----

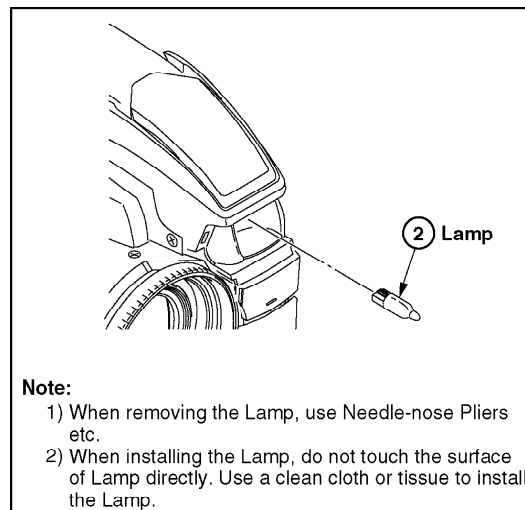
6.1.9.1. Light Cover

Fig. D14-1



6.1.9.2. Lamp

Fig. D14-2



6.2. SCREWS FOR DISASSEMBLY/ASSEMBLY OF CABINET

6.3. MECHANISM SECTION

6.3.1. Disassembly Method

This procedure starts with the condition that the cabinet parts and Main C.B.A. have been removed.
When reassembling, perform the step(s) in the reverse order.

Perform all disassembly and alignments procedures in STOP Position except disassembly and alignment procedures which have the special Notes.

STEP LOC. No.	Prior Step (s)	Part	Fig. No.	Remove
①	-	Cassette Up Unit	DM3-1,2	2 ⑥③, 2(L-1)
②	-	Cylinder Unit	DM4-1	3 ⑥③, Hooking Portion
③	-	Not used	-	-
④	2	Cylinder/Head Amp F.P.C.	DM4-2	Connector, FP3501
⑤	2	Bulge Chip	DM4-2	⑥②
⑥	-	P.C.B. Angle	DM5	④③
⑦	-	Mechanism F.P.C. Unit	DM6-1,2	4 ④③, Hooking Portion, double-sided adhesive tape, Unsolder Gear Alignment (x1)
⑧	1,9	Tension Unit	DM7-1,2	④①, Hooking Portion
⑨	1,8	Reel Table Unit	DM7-1,2	④⑨, ④⑩
⑩	1,8,9	Rev Clutch	DM8	④⑨
⑪	1	Take Gear	DM9-1,2	(L-1)
⑫	1,11	Rev Brake Arm Unit	DM9-1,2	④⑨, Hooking Portion
⑬	-	A/C Head Unit	DM10	④③, Unsolder
⑭	-	Capstan Belt	DM11	-
⑮	6,13,14	Capstan Unit	DM12	3 ④⑦
⑯	1,6,7,11,12,14	Idler Arm Unit	DM13	④⑨
⑰	2	Mechanism Support Angle	DM14	④⑤
⑱	1	Reduction Gear B	DM15	④①
⑲	-	Reduction Gear A	DM16	④⑨
⑳	1,18	Reduction Gear Unit	DM16	2 ⑥③
㉑	1	Pinch Arm Unit	DM17-1,2	④①
㉒	1	Opener	DM17-1,2	④⑦
㉓	1,11,21,22	P5 Arm Unit	DM17-1,2	Hooking Portion
㉔	1,17	Takeup Post Unit	DM18-1,2	⑥④
㉕	1	Supply Post Unit	DM18-1,2	④⑥
㉖	-	Impedance Roller Unit	DM19-1,2	④⑨
㉗	1,2,13,24,25	Loading Base Unit	DM19-1,2	4 ④⑤
㉘	1,2,8,9,13,24,25,27	Takeup Loading Arm Unit	DM20	- Gear Alignment (x1)
㉙	1,2,8,9,13,24,25,27	Supply Loading Arm Unit	DM21-1,2,3	- Gear Alignment (x2)
㉚	8,9,19	Loading Motor Unit	DM22	2 ④④
㉛	1,2,8,9,10,18,19,20,24,25,27,29,30	Main Cam Unit	DM22	-
㉜	1,2,8,9,10,18,19,20,24,25,27,29,30,31	Pinch Toggle	DM22	-

How to read chart shown above:

- A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
- B: Steps to be completed prior to the current step.
- C: Part to be removed or installed.
- D: Fig. No. showing Procedure or Part Location.
- E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
2(L-1) = 2 Looking Tabs (L-1)

CAUTION:

- a. Use a wrist strap to provide ESD protection while disassembling or assembling.
- b. Removed Cut Washer is not reusable. If removed, install a new one.

Following Cut Washers are to be used:

Ref. No.	Part No.
④③	VMXW0217
④①	VMXW0213
④⑨	VMX2026

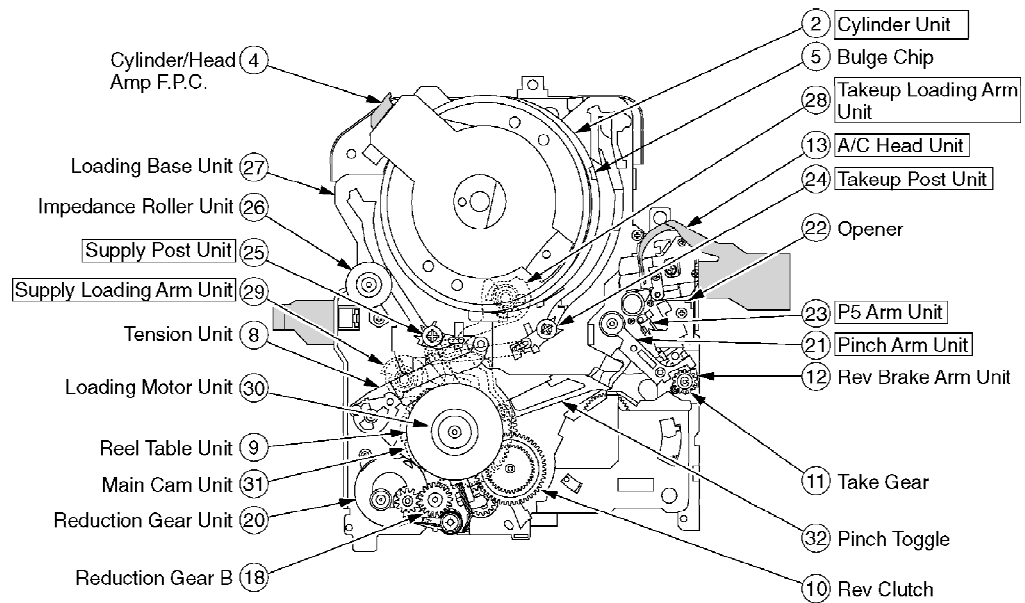
6.3.2. Inner Parts Location

Note:

BOX indicates alignment (Gear alignment or Tape Interchangeability adjustment) required when a part is replaced.

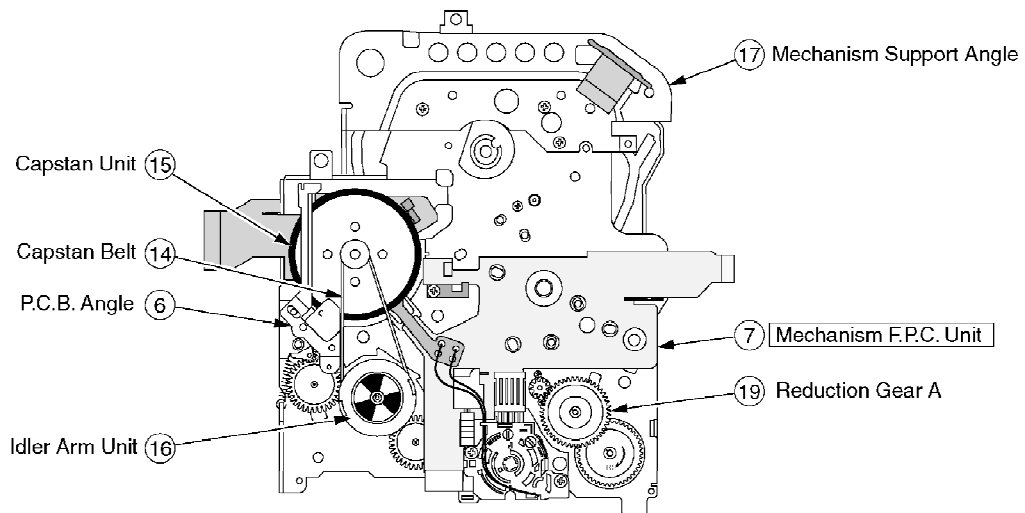
6.3.2.1. TOP VIEW

Fig. DM1-1



6.3.2.2. BOTTOM VIEW

Fig. DM1-2

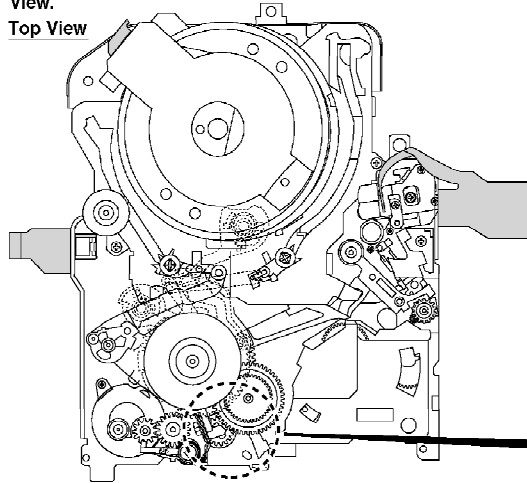


6.3.3. STOP Position Confirmation

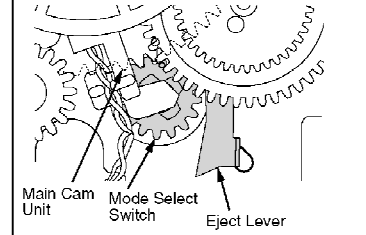
Fig. DM2

Check the following alignment points to confirm that the Mechanism is in STOP Position from the Top and Bottom View.

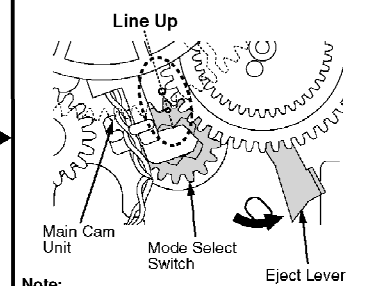
Top View



EJECT Position

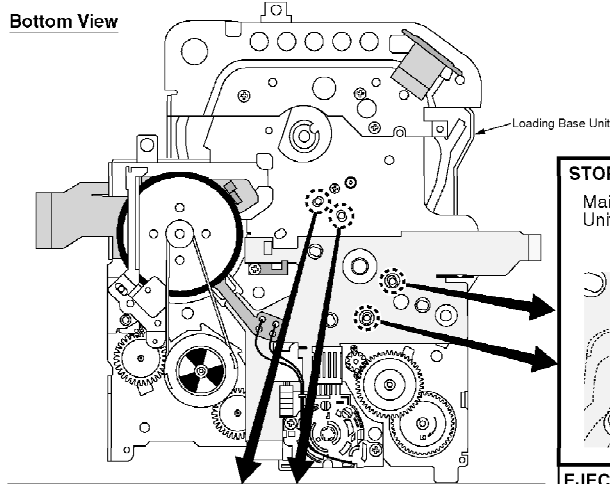


STOP Position

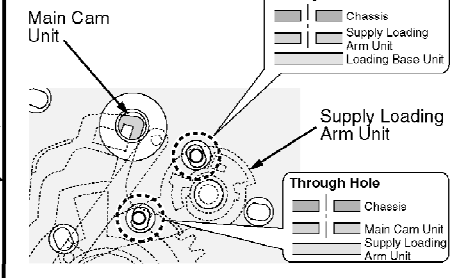


Note:
Slide the Eject Lever when installing the Cassette Up Unit.

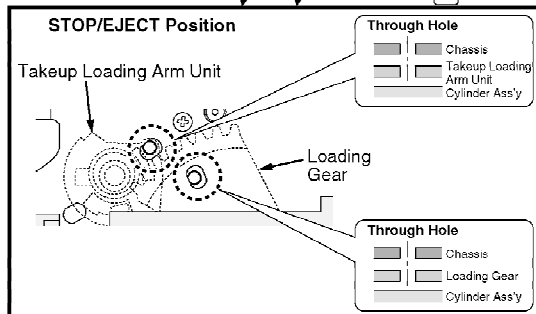
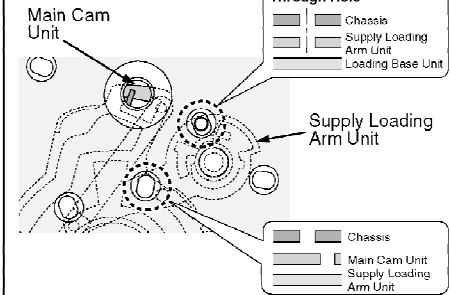
Bottom View



STOP Position



EJECT Position



Perform all disassembly and alignments procedures in STOP Position except disassembly and alignment procedures which have the special Notes.

6.3.4. Cassette Up Unit

Fig. DM3-1

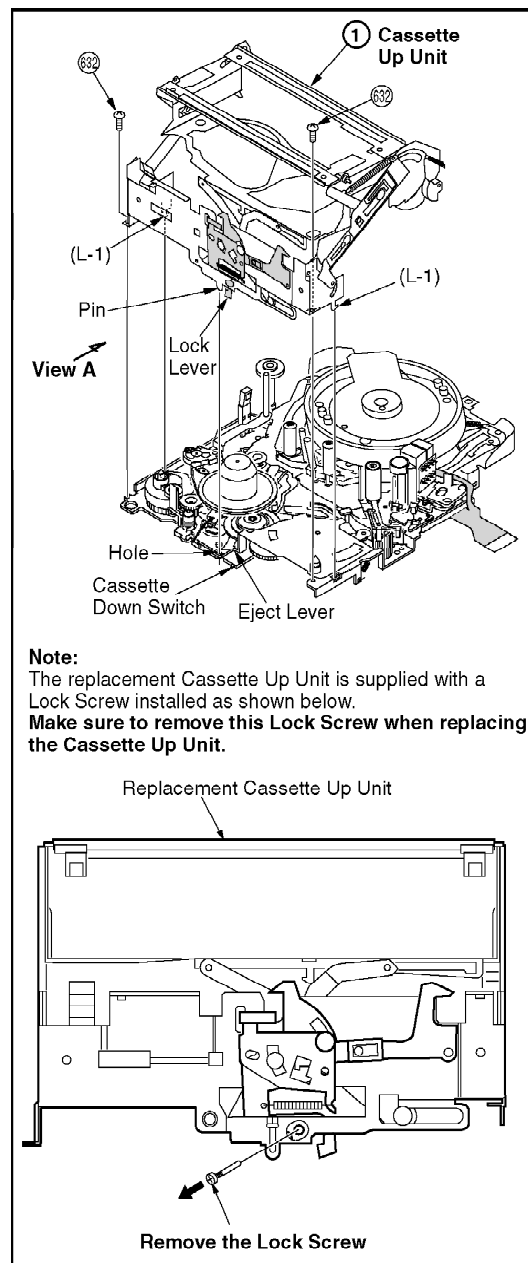


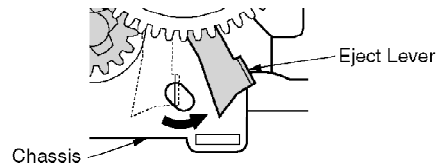
Fig. DM3-2

Reassembly Note:

1. Installation of the Cassette Up Unit

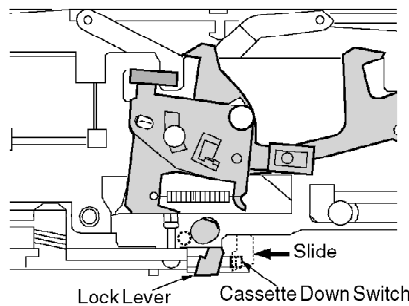
Installation is possible except when the Mechanism is in Eject Position.

- (1) Before installing the Cassette Up Unit, confirm that the Eject Lever is slid as shown.



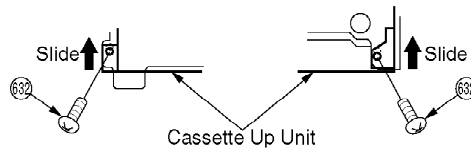
Top View

- (2) Slide the Lock Lever. (Otherwise, the Lock Lever may damage the Cassette Down Switch when installing the Cassette Up Unit.)



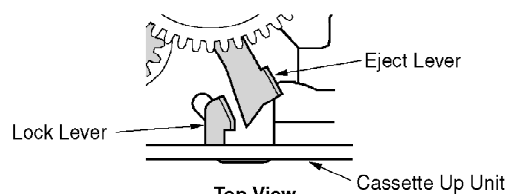
View A

- (3) Then, Install the Cassette Up Unit while setting 2 Locking Tabs (L-1). Next, insert Pin into Hole on the Chassis.
- (4) Slide the Cassette Up Unit as far as possible as indicated by the arrow. Then, tighten 2 Screws (632).



Top View

- (5) After installing the Cassette Up Unit, confirm that the Lock Lever is on the left of the Eject Lever as shown.



Top View

6.3.5. Cylinder Unit

Fig. DM4-1-1

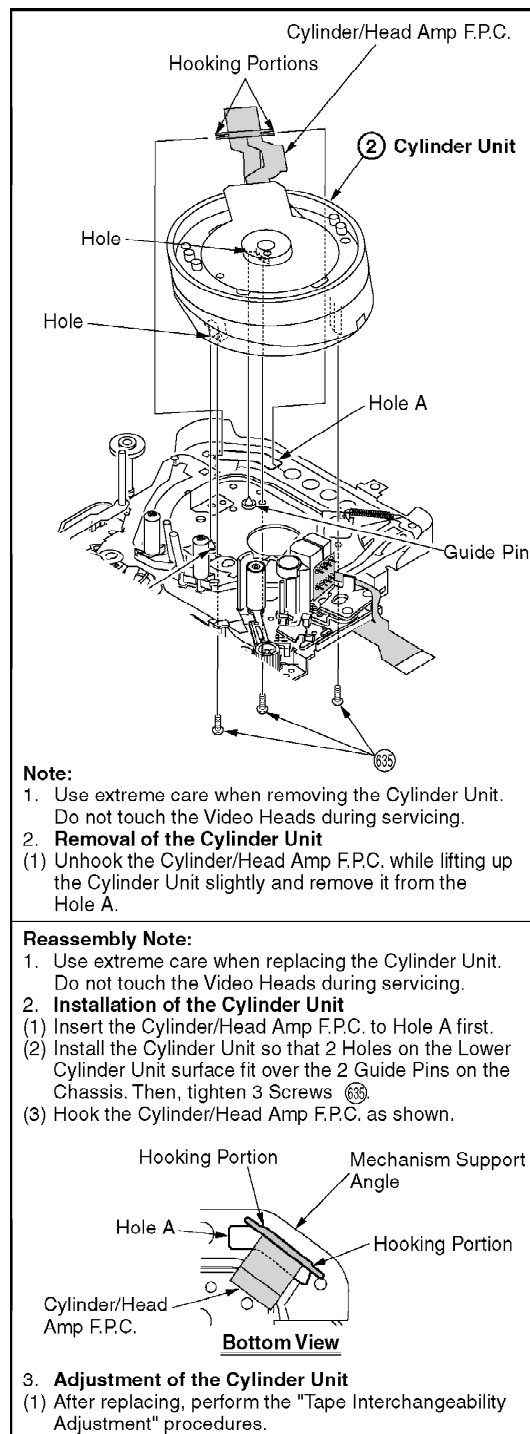
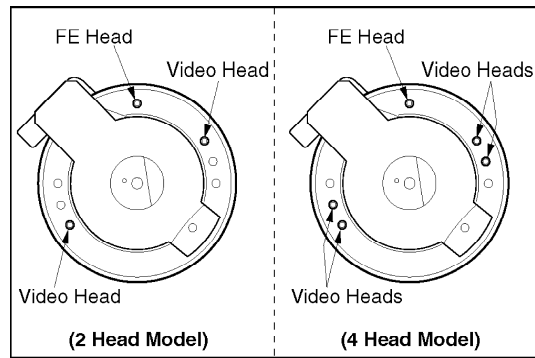
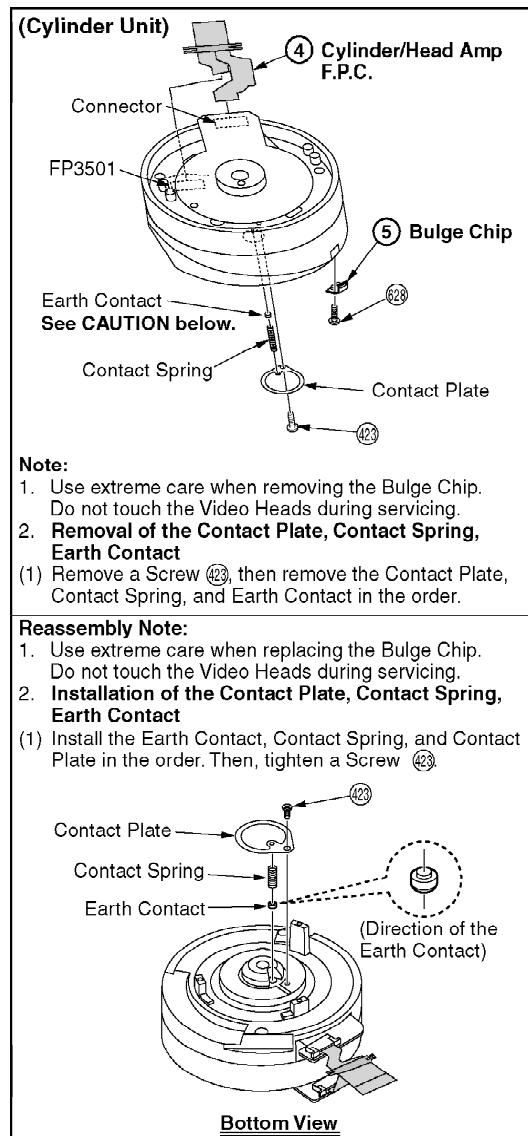


Fig. DM4-1-2



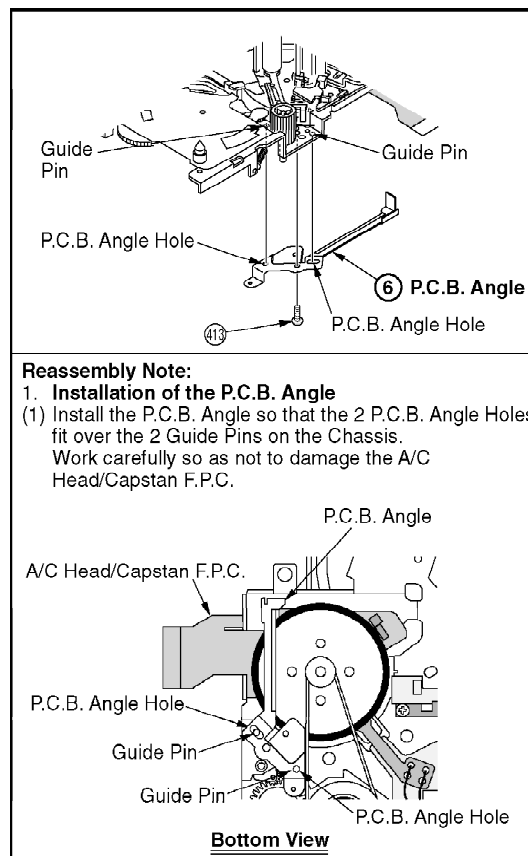
6.3.6. Cylinder/Head Amp F.P.C., Bugle Chip

Fig. DM4-2



6.3.7. P.C.B. Angle

Fig. DM5



6.3.8. Mechanism F.P.C Unit

Fig. DM6-1

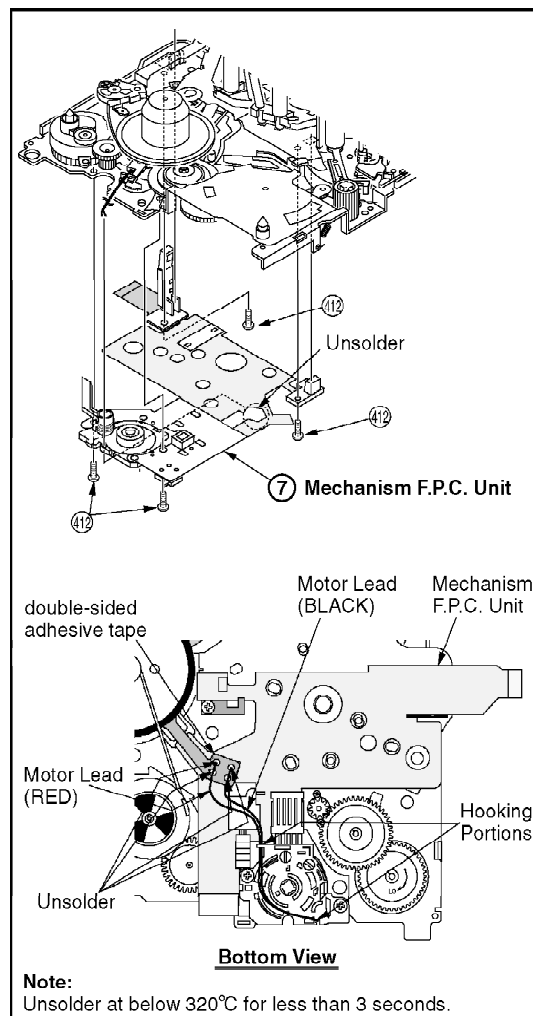


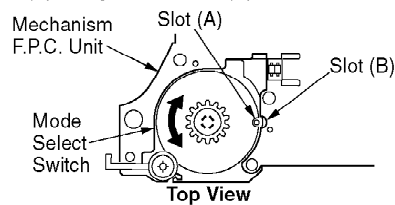
Fig. DM6-2

Reassembly Note:

1. Gear Alignment

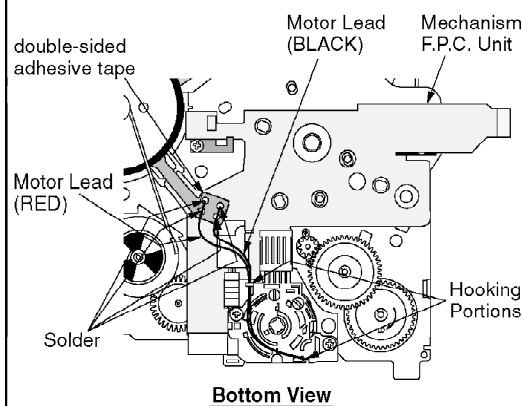
• The Mode Select Switch and the Main Cam Unit

- (1) Place the Mechanism in the **STOP Position** by rotating the Gear of Reduction Gear Unit.
- (2) Before installing the Mechanism F.P.C. Unit, rotate the Mode Select Switch of Mechanism F.P.C. Unit so that Slot (A) is aligned with Slot (B).

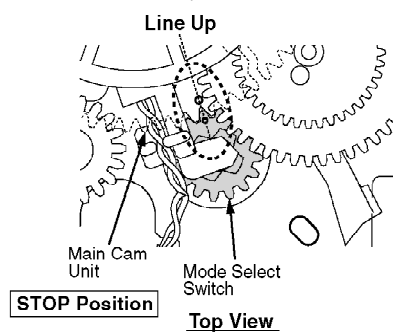


2. Installation of the Mechanism F.P.C. Unit

- (1) Install the Mechanism F.P.C. Unit to the bottom of the Chassis. Then, tighten 4 Screws (412).
- (2) Solder the Motor Leads as shown.
Note: Solder at below 320 °C for less than 3 seconds.
- (3) Hook the Motor Leads and the tube to Hooking Portions together.
- (4) Confirm that the Motor Leads are set correctly on the Mechanism F.P.C. Unit as shown.



- (7) Confirm that the Mode Select Switch is in STOP Position from the Top side.



6.3.9. Tension Unit, Reel Table Unit

Fig. DM7-1

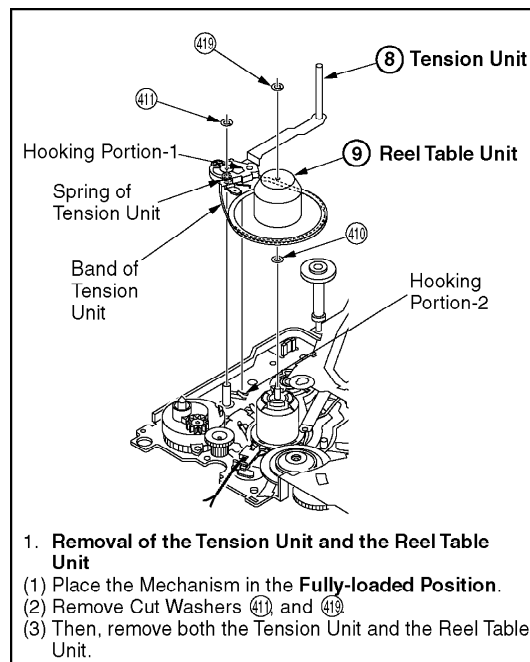
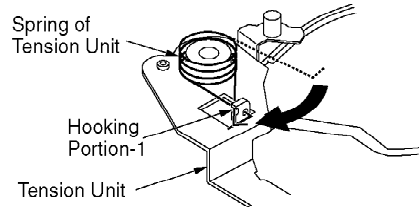


Fig. DM7-2

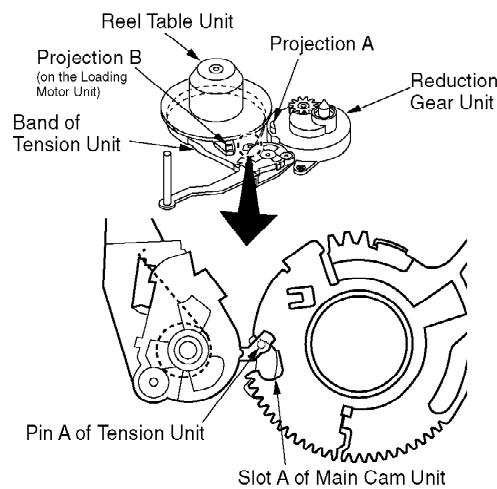
Reassembly Note:

1. Installation of the Reel Table Unit and the Tension Unit

- (1) Before installing the Reel Table Unit and the Tension Unit, place the Mechanism in the **Fully-loaded Position** by rotating the Gear of Reduction Gear Unit.
- (2) Install a Washer (410) onto the Loading Motor Unit first.
- (3) Hook the Spring of Tension Unit to the Tension Unit as shown.



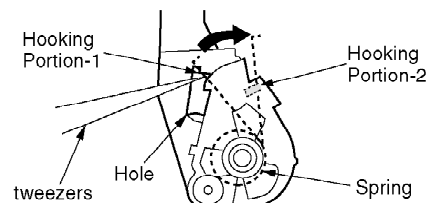
- (4) Hook the Band of Tension Unit to the groove of Reel Table Unit.
- (5) Install both the Reel Table Unit and Tension Unit to the Chassis so that the Pin A of Tension Unit is set into Slot A of the Main Cam Unit. Confirm that the Band of Tension Unit keeps off Projection A and B.



Fully-loaded (Play) Position

Top View

- (5) Unhook the Spring of Tension Unit from Hooking Portion-1 with tweezers etc. inserted through Hole to let it hook to Hooking Portion-2 on the chassis.

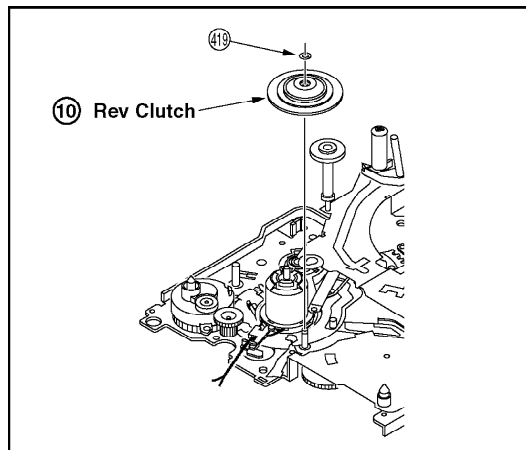


Top View

- (6) Install Cut Washers (419) and (411).

6.3.10. Rev Clutch

Fig. DM8



6.3.11. Take Gear, Rev Brake Arm Unit

Fig. DM9-1

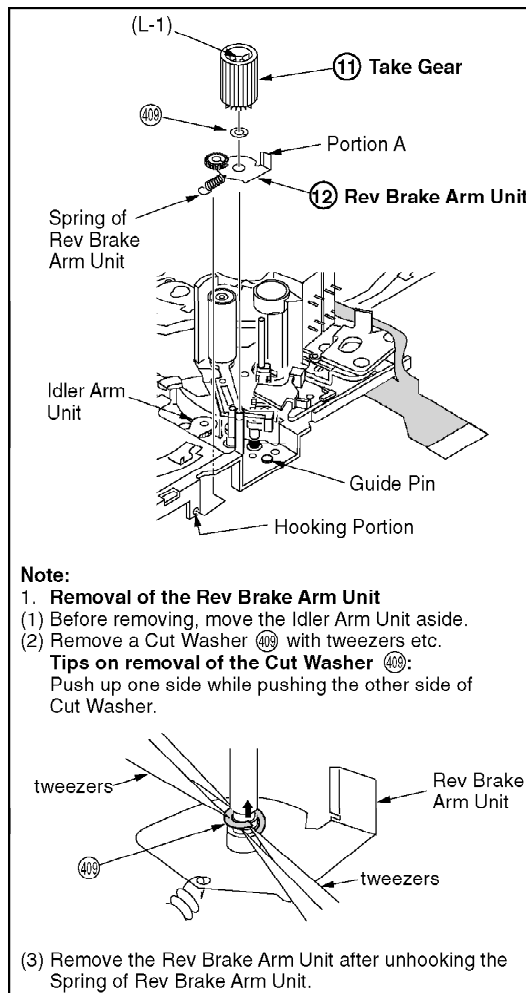
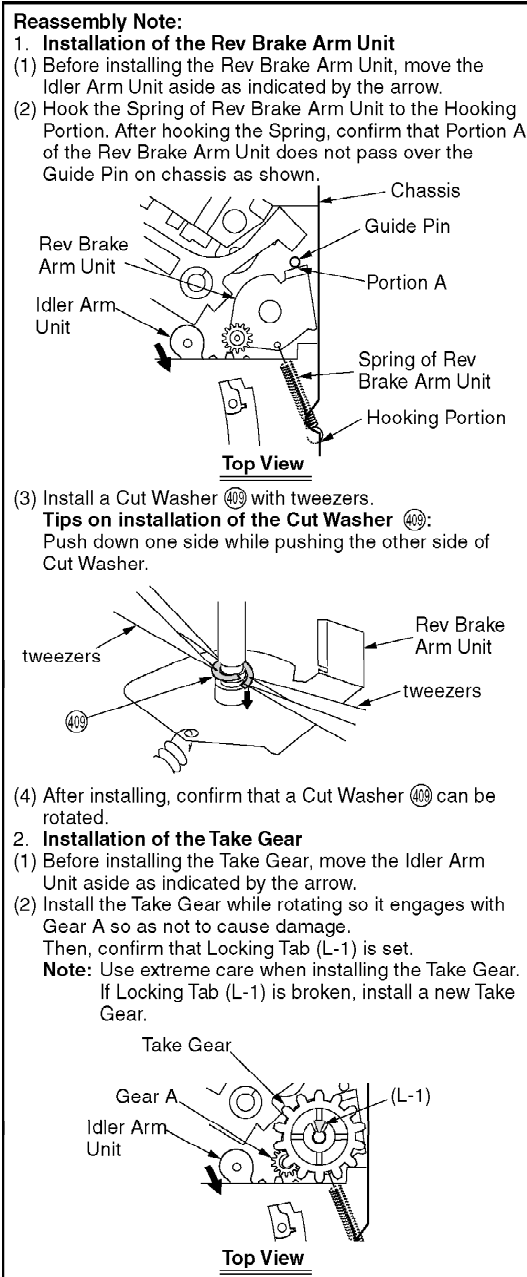
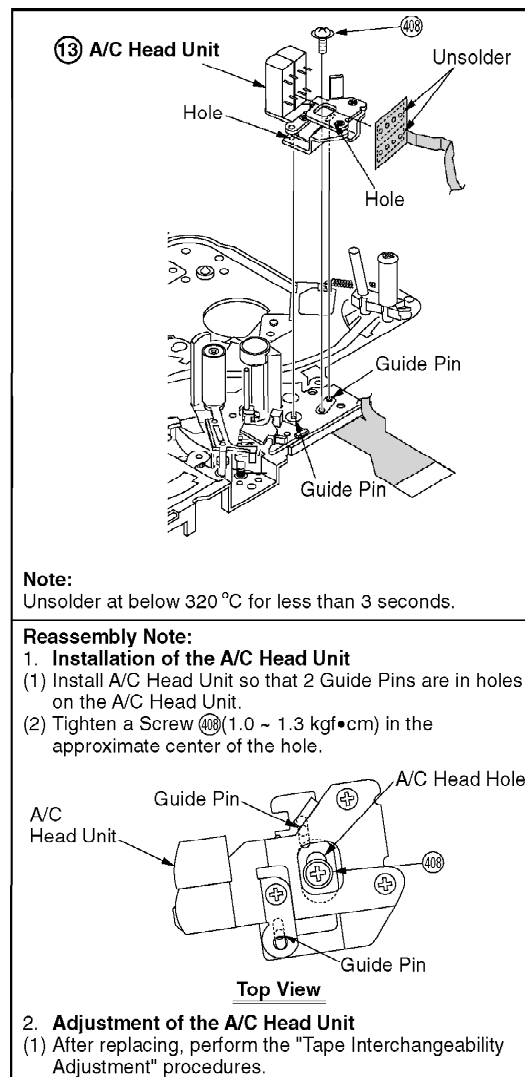


Fig. DM9-2



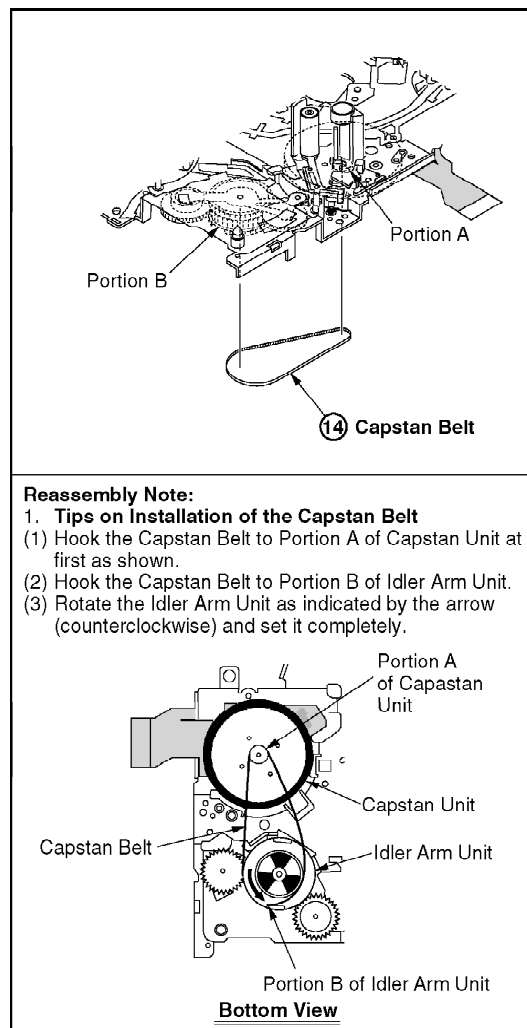
6.3.12. A/C Head Unit

Fig. DM10



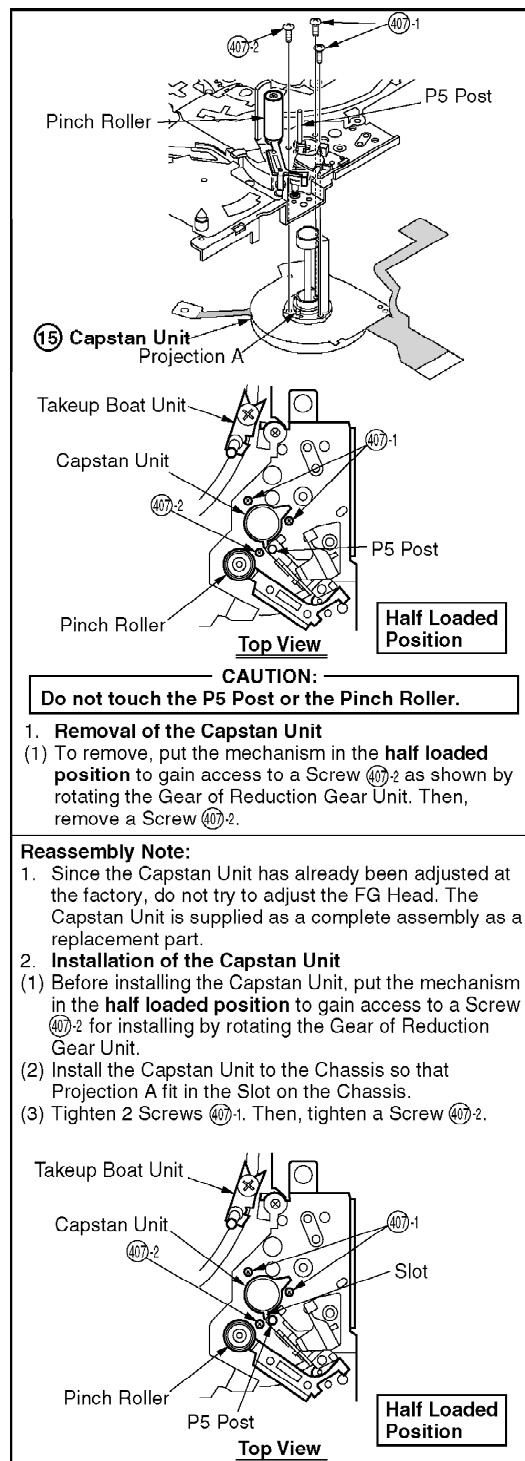
6.3.13. Capstan Belt

Fig. DM11



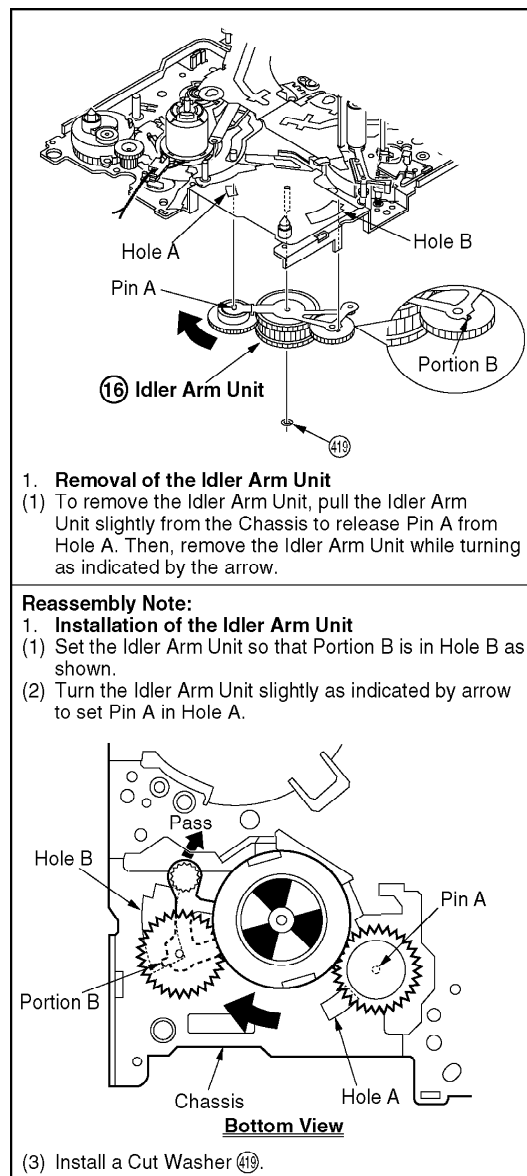
6.3.14. Capstan Unit

Fig. DM12



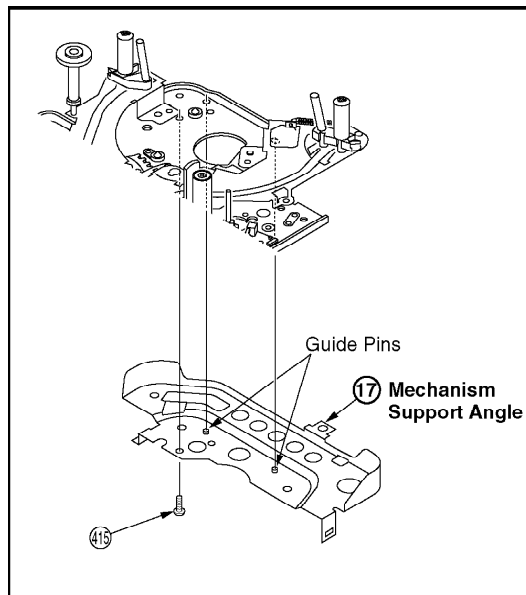
6.3.15. Idle Arm Unit

Fig. DM13



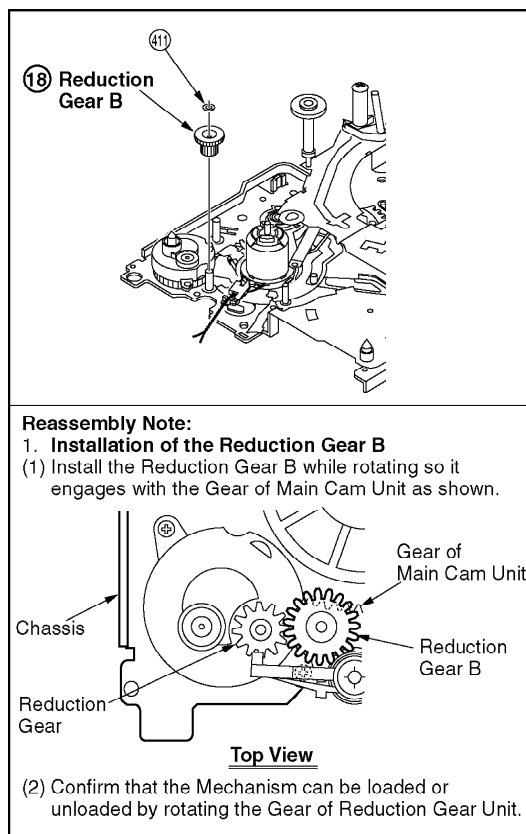
6.3.16. Mechanism Support Angle

Fig. DM14



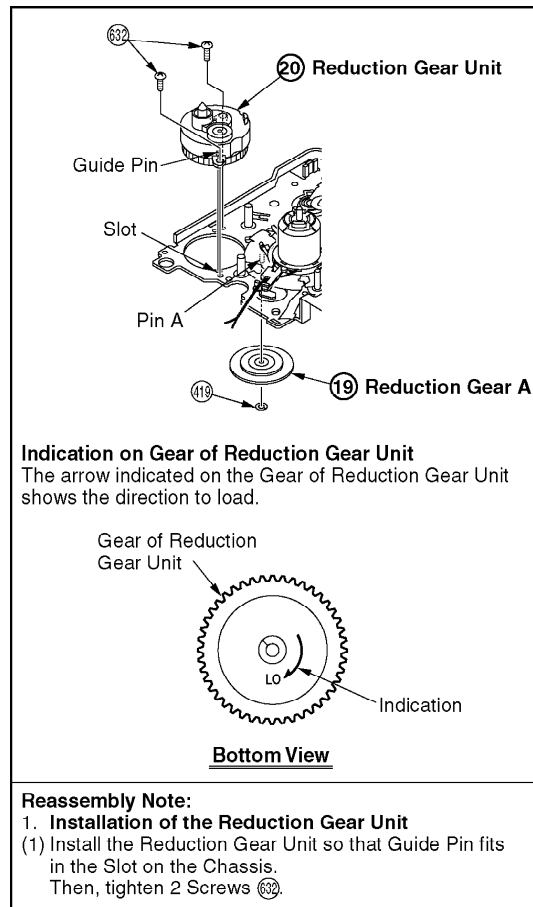
6.3.17. Reduction Gear B

Fig. DM15



6.3.18. Reduction Gear A, Reduction Gear Unit

Fig. DM16



6.3.19. Pinch Arm Unit, Opener, P5 Arm Unit

Fig. DM17-1

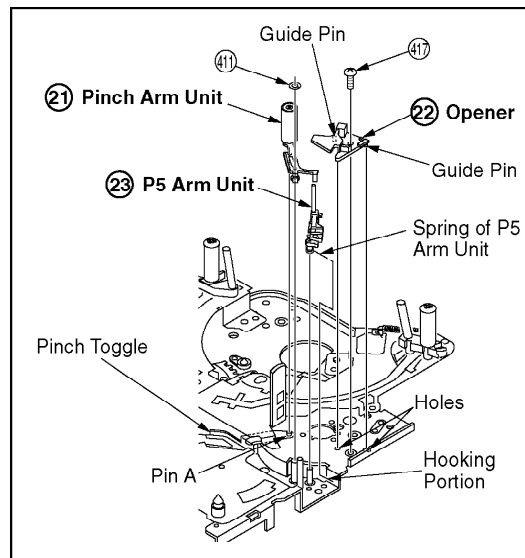
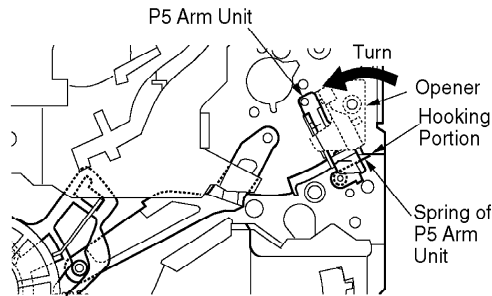


Fig. DM17-2

Reassembly Note:

1. Installation of the P5 Arm Unit and the Opener

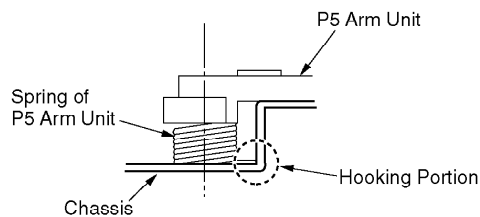
- (1) Before installing the P5 Arm Unit, put the Mechanism in the **Loading Position** (S and T Posts are located at the end of guide slots) to make installing the Pinch Arm Unit easier. (See 2. **Installation of the Pinch Arm Unit**.)
- (2) Install the P5 Arm Unit while hooking the Spring to Hooking Portion.
- (3) Turn the P5 Arm Unit as indicated by the arrow while lifting up the P5 Arm Unit slightly from the Chassis.



Loading Position

Top View

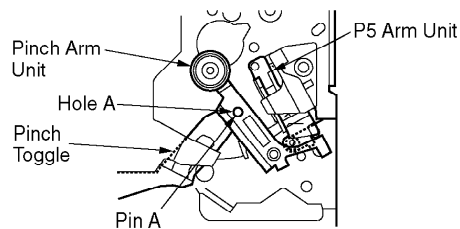
- (4) Install the Opener so that Guide Pins on the Opener fit in Holes on the Chassis. Then, tighten a Screw (417).
- (5) Confirm that the P5 Arm Spring is hooked on the bottom of chassis.



Side View

2. Installation of the Pinch Arm Unit

- (1) Install the Pinch Arm Unit.
- (2) Fit Hole A on the Pinch Arm Unit over Pin A on the Pinch Toggle as shown.



Top View

- (3) Install the a Cut Washer (411).

3. Adjustment of the P5 Arm Unit and the Pinch Arm Unit

- (1) After replacing, perform the "Tape Interchangeability Adjustment" procedures.

6.3.20. Takeup Post Unit, Supply Post Unit

Fig. DM18-1

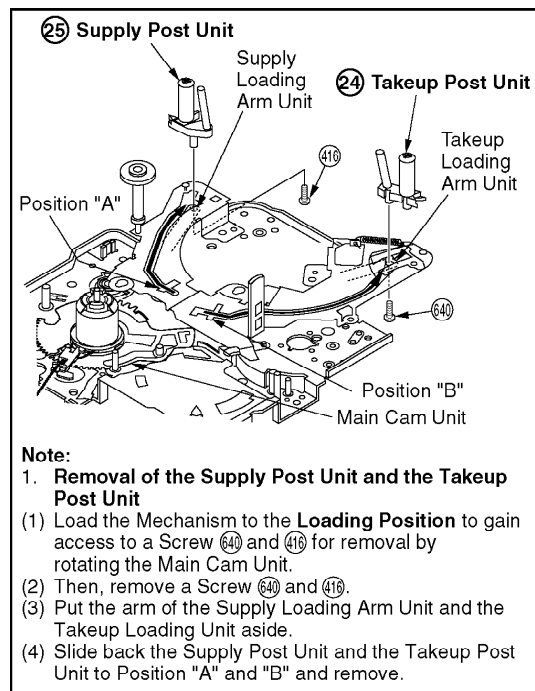
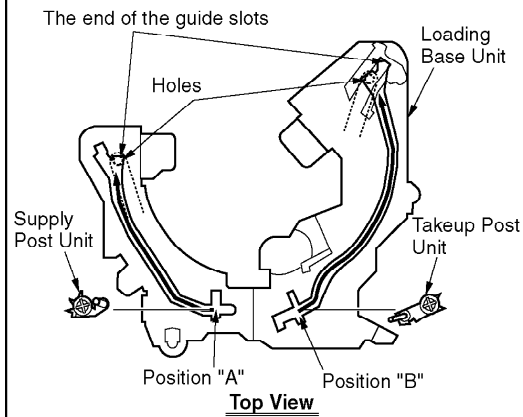


Fig. DM18-2

Reassembly Note:

1. Installation of the Supply Post Unit and the Takeup Post Unit

- (1) Confirm that the end of the arm (the threaded hole) of Supply Loading Arm Unit and the end of the arm (the threaded hole) of Takeup Loading Arm Unit are in the end of the guide slots.
- (2) Install the Supply Post Unit and the Takeup Post Unit into Position "A" and "B" while being careful of the direction of the Supply Post Unit and the Takeup Post Unit.
- (3) Slide the Supply Post Unit and the Takeup Post Unit to the end of guide slots as shown.



- (4) Align the Hole of the Supply Loading Arm Unit with the Threaded Hole of the Supply Post Unit. Do the Same with the Takeup Post Unit.

- (5) Tighten a Screw ⑥40 and ④19.

Caution:

Be careful of the following when tightening a Screw ⑥40 and ④19.

1. Be sure to tighten screws straight.
2. Do not over tighten screws.

2. Adjustment of the Supply Boat Unit and Takeup Boat Unit

- (1) After replacing, perform the "Tape Interchangeability Adjustment" procedures.

6.3.21. Impedance Roller Unit, Loading Base Unit

Fig. DM19-1

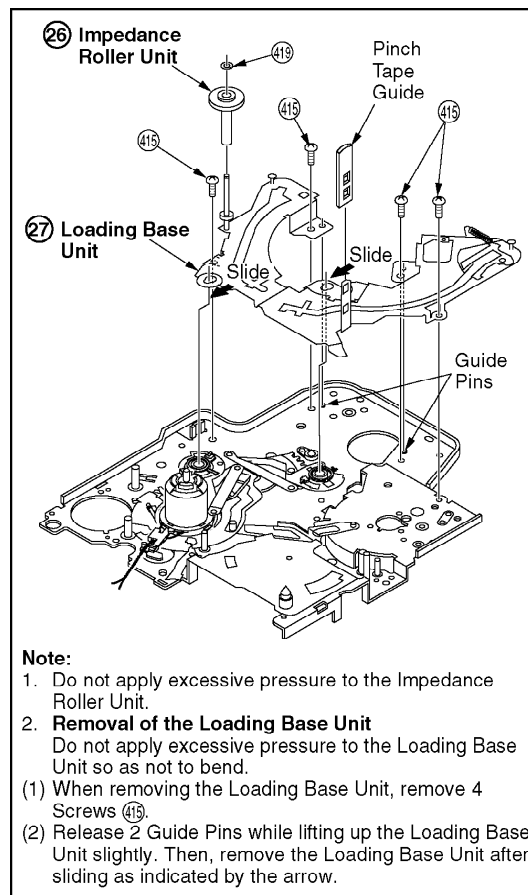
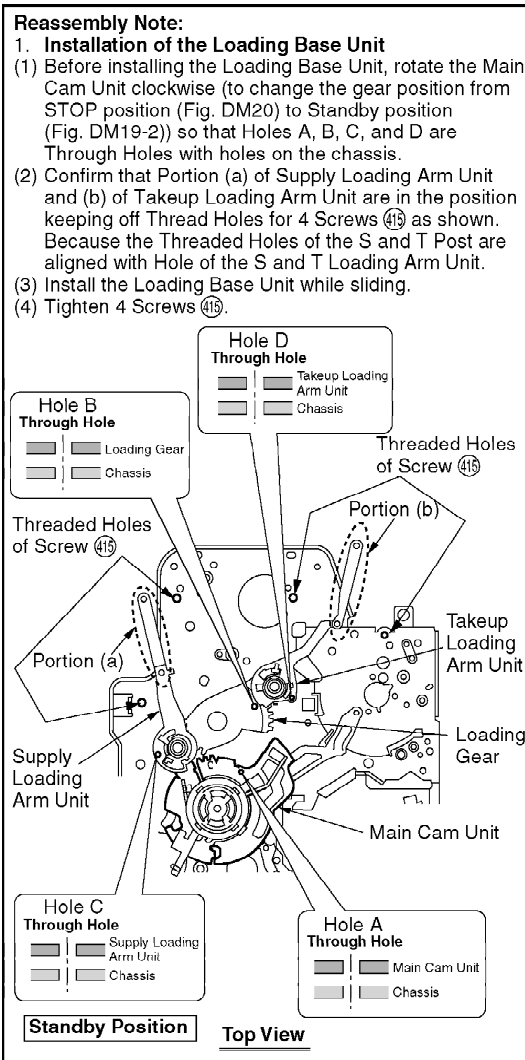
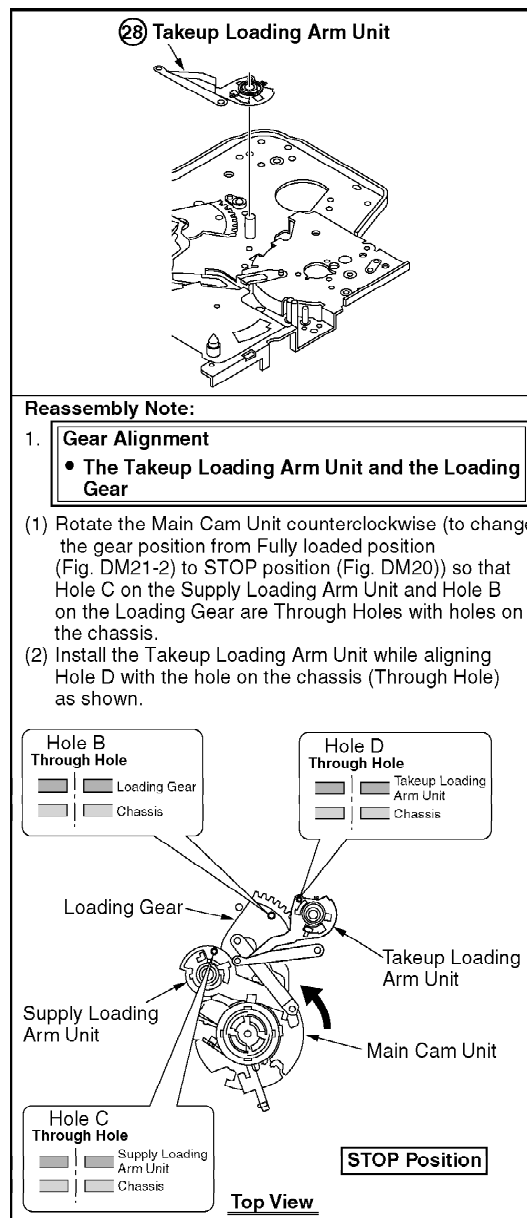


Fig. DM19-2



6.3.22. Takeup Loading Arm Unit

Fig. DM20



6.3.23. Supply Loading Arm Unit

Fig. DM21-1

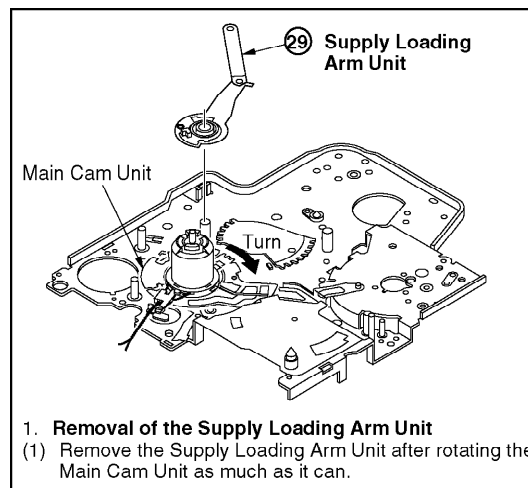


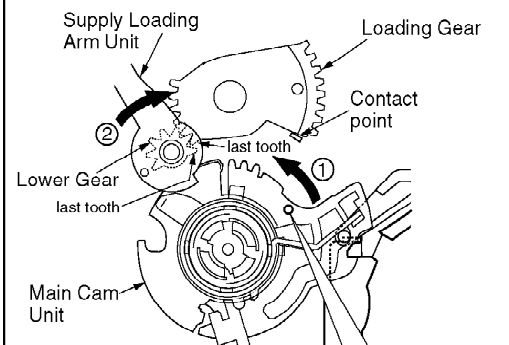
Fig. DM21-2

Reassembly Note:

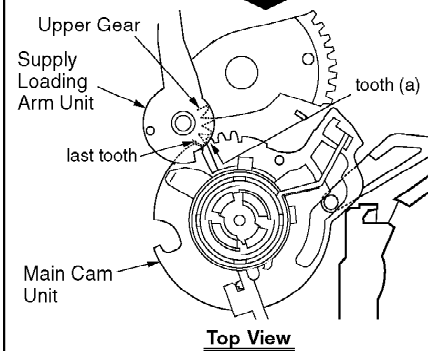
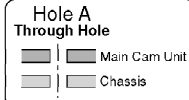
1. **Gear Alignments**

- The Supply Loading Arm Unit and the Loading Gear
- The Supply Loading Arm Unit and the Main Cam Unit

- (1) Confirm that Hole A on the Main Cam Unit is a Through Hole with a hole on the chassis by rotating the Main Cam Unit clockwise as much as possible. Also, make sure the Loading Gear makes contact with contact point.
- (2) Set the Supply Loading Arm Unit so that the last tooth of its lower gear is just outside the last tooth of the Loading Gear as shown.
- (3) Turn the Main Cam Unit counterclockwise first ①, then turn Supply Loading Arm Unit clockwise slightly ② so that the last tooth on upper gear of Supply Loading Arm Unit is just outside tooth (a) of Main Cam Unit.

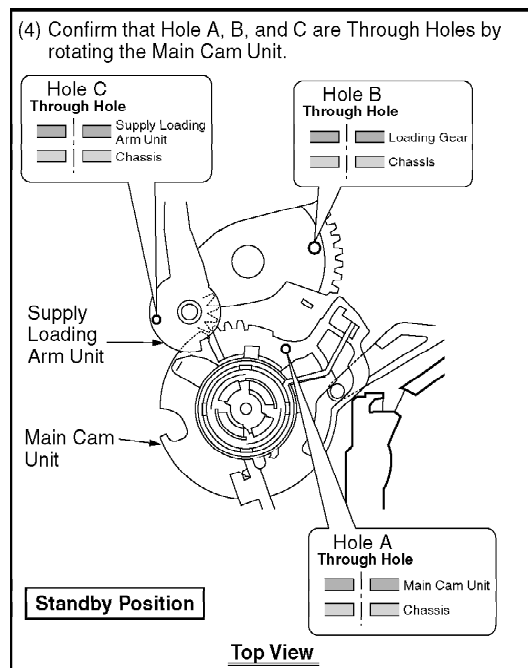


Fully Loaded (Play) Position



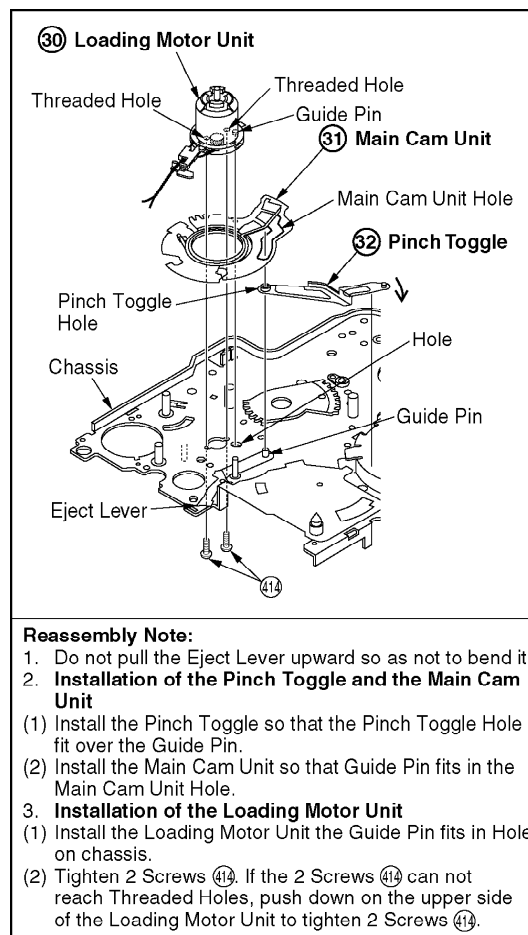
Top View

Fig. DM21-3



6.3.24. Loading Motor Unit, Main Cam Unit, Pinch Toggle

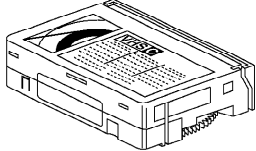
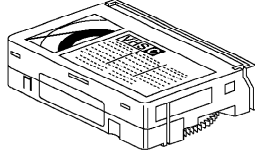
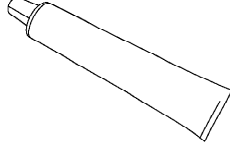
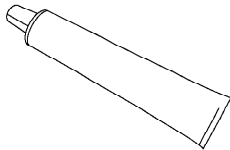



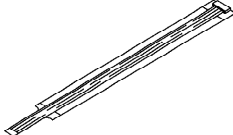
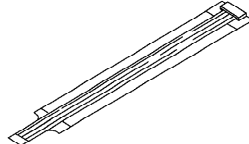
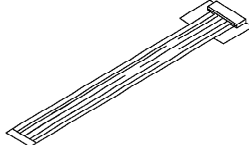
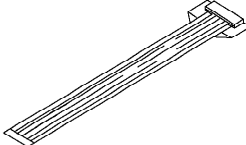
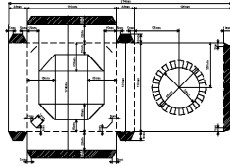
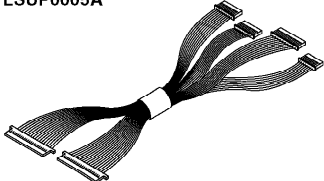
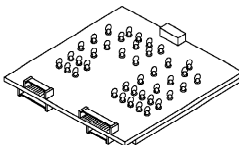
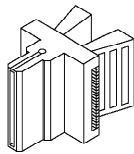
Fig. DM22

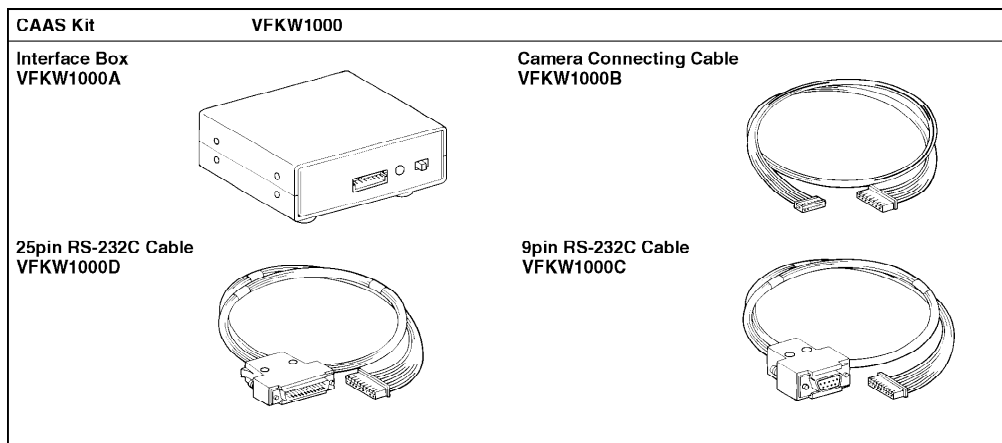


6.4. SCREWS FOR DISASSEMBLY/ASSEMBLY OF MECHANISM

7. ADJUSTMENT PROCEDURES

7.1. SERVICE FIXTURES & TOOLS

VHS-C Alignment Tape VFMS0004H6C 	VHS-C Alignment Tape VFMW0001C 	Molytone Grease VFK1024 
Grease LSUQ0002 	Grease VFKS0081 	Lock Screw VHDW0125 
Head Cleaning Stick VFK27 	Extension Cable 12P VUVS0007 	Extension Cable 20P LSUA0020 
Extension Cable 26P LSUA0021 	Extension Cable 28P VUVS0015 	A.W.B. Adjustment Fixture VFKW0066 
TP Board TP Adjustment Cable 40P LSUP0005A 	TP Adjustment P.C.B. 40P VFKW0123B 	TP Clip 36P LSUP0005C 

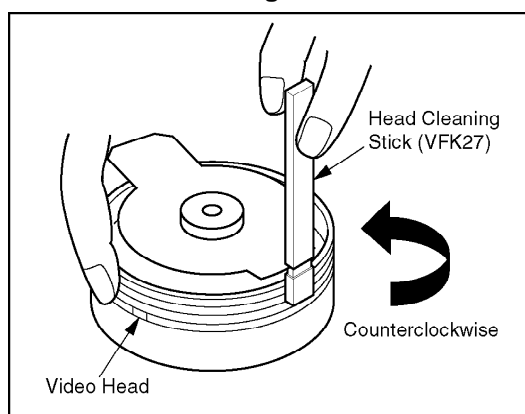


7.2. MECHANICAL ADJUSTMENT

7.2.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Isopropyl Alcohol 91 %.

Fig. M1



Note:

- A. Do not rub vertically or apply excess pressure to the Video Heads.
Do not turn the Upper Cylinder Unit clockwise while cleaning.
- B. After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Isopropyl Alcohol 91 % remaining on the cylinder tape path. Otherwise, tape damage will occur.

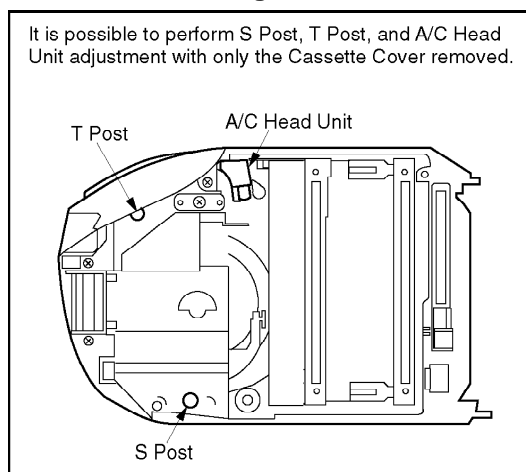
7.2.2. ADJUSTMENT PROCEDURES

7.2.2.1. TAPE INTERCHANGEABILITY ADJUSTMENT

Before perform these Adjustment/Confirmation procedures, be sure to complete following items.

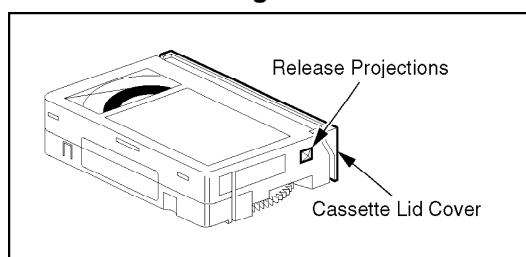
1. Connect the TP Board to S301 on the camcorder. Refer to "HOW TO USE TP BOARD" in "SERVICE NOTES."

Fig. M2-1



2. Put the unit into the service mode "I. TRACKING FIX" to defeat Auto Tracking. Refer to "SERVICE MODE SPECIFICATION (SELF-DIAGNOSTIC SYSTEM)" in "SERVICE NOTES."
3. Remove the Cassette Lid Cover from the Cassette Tape or the Alignment Tape.

Fig. M2-2



Equipment Required:

- Dual Trace Oscilloscope
- VHS-C Alignment Tape (VFMS0004H6C)
- VHS-C Alignment Tape (VFMW0001C)
- Screwdriver Set (Purchase Locally)
- TP Board
- TP Adjustment Cable 40P (LSUP0005A)
- TP Adjustment P.C.B. 40P (VFKW0123B)
- TP Clip 36P (LSUP0005C)

7.2.2.1.1. ENVELOPE OUTPUT ADJUSTMENT

The height of the S and T Posts replacement part is preset at the factory.

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

1. Put the unit into the service mode "I. Tracking Fix" to defeat Auto Tracking. Refer to "SERVICE MODE SPECIFICATION (SELF-DIAGNOSTIC SYSTEM)" in "SERVICE NOTES."
 2. Connect the oscilloscope to Pin 30 (Envelope signal) on the TP Adjustment P.C.B. Use Pin 33 (Head Switch signal) as a trigger.
 3. Play back the Alignment Tape (VFMS0004H6C).
 4. Confirm that the RF envelope is flat enough. If not, with Flat Headed (—) Screwdriver, adjust S and T post height so that the envelope waveform becomes as flat as possible (No envelope drop). If the envelope drop appears on the left-half of the waveform, adjust S post height. If the envelope drop appears on the right-half of the waveform, adjust T post height.
- CAUTION:** Do not apply excessive pressure onto the S and T Posts when adjusting S and T post height.

Fig. M3-1

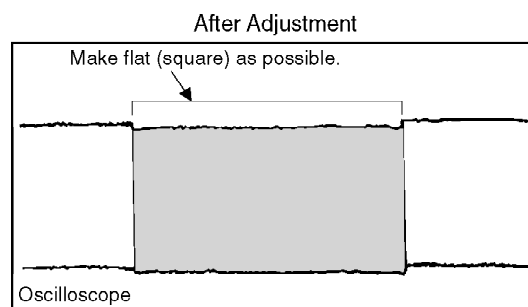
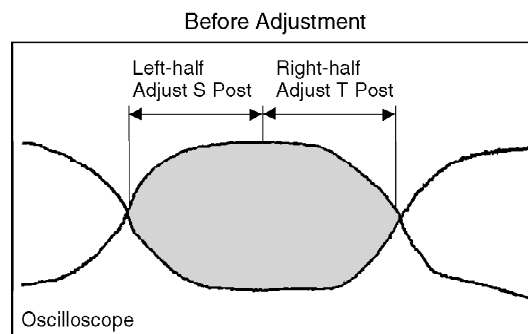
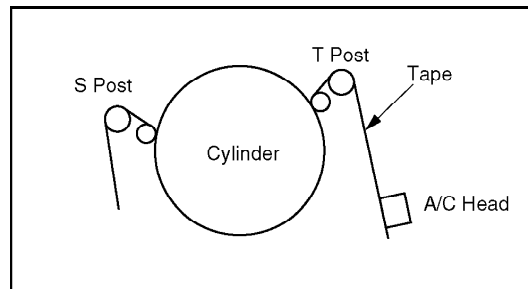


Fig. M3-2

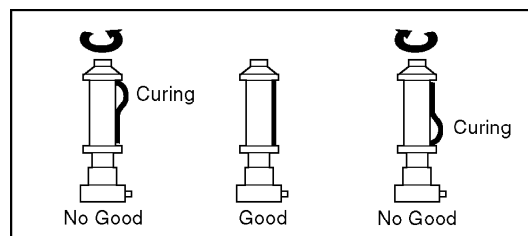


Note:

It will be possible to confirm step 4) after performing the following steps.

- A. Exit the "I. TRACKING FIX" mode, then skip the "J. PG SHIFTER" mode to enter other modes (except these 2). Or, close the service mode.
 - B. Press the Tracking Control Up or Down button on the camcorder. Make sure that the envelope waveform remains flat. If not, readjust S and/or T post heights.
5. After adjustment, confirm that the tape travels without curing at S and T posts.
- If curing is apparent, readjust the height of posts.

Fig. M3-3



7.2.2.1.2. A/C HEAD HEIGHT ADJUSTMENT

The height of the A/C Head replacement part is preset at the factory.

Purpose:

To be sure the tape runs properly along the Control Head.

Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation can not be achieved.

1. Connect the oscilloscope to Pin 25 (PB Control signal) on the TP Adjustment P.C.B.
2. Play back the Alignment Tape (VFMW0001C)
3. Confirm that the Sub Control Signal is 500 mV/200 mV. If not,

slightly and equally adjust Screw A, Screw B, and Screw C on the A/C Head Unit to achieve the sub control signal level of 500 mV \pm 200 mV.

(Sub Control Signal level will decrease when rotating screws clockwise, and increase when rotating screws counterclockwise.)

Fig. M4-1

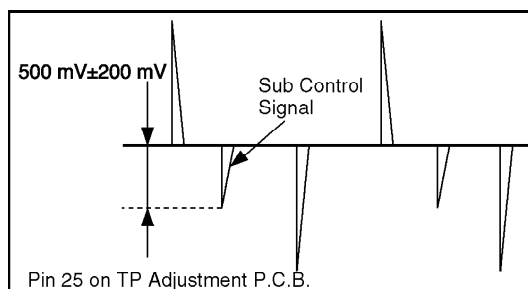
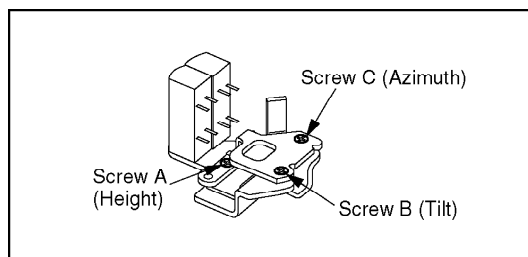


Fig. M4-2



7.2.2.1.3. A/C HEAD AZIMUTH ADJUSTMENT

Purpose:

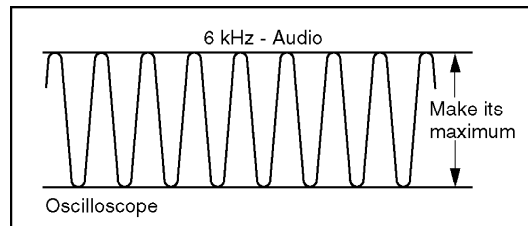
To adjust the position and height of the A/C Head so that it meets the tape tracks properly.

Symptom of Misadjustment:

If the position of the A/C Head is not properly adjusted, the Audio S/N Ratio will be poor.

1. Connect the Audio/Video Cable on the camcorder.
2. Connect the oscilloscope to audio output jack.
3. Playback the Alignment Tape (VFMS0004H6C).
4. Adjust Screw C (Azimuth) on the A/C Head Unit so that the output level is at maximum.

Fig. M5



5. Confirm and readjust the A/C Head height.

6. Confirm and readjust Screw C (Azimuth) on the A/C head so that the output audio becomes is maximum.

7.2.2.1.4. A/C HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose:

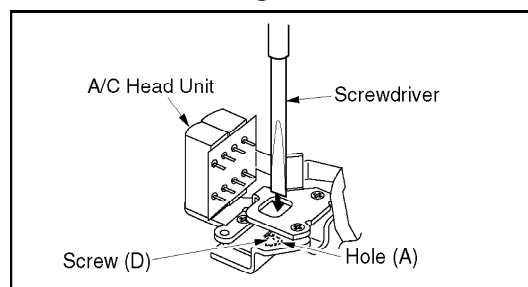
To adjust the Horizontal Position of the A/C Head.

Symptom of Misadjustment:

If the Horizontal Position of the A/C Head is not properly adjusted, maximum envelope can not be obtained at the Neutral Position of the Tracking Control Circuit.

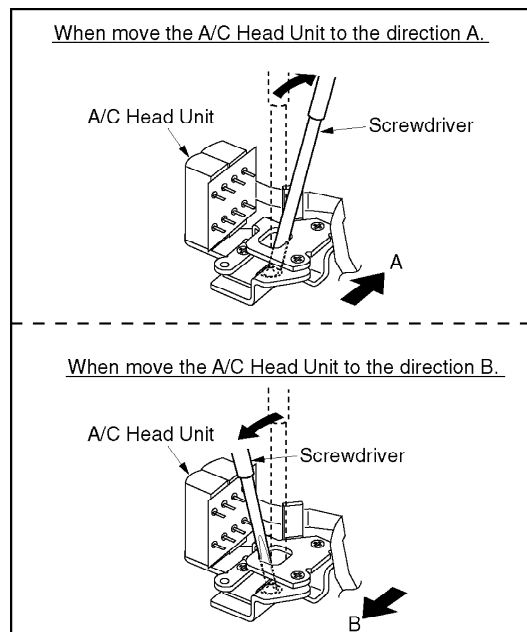
- 1. Put the unit into the service mode "I. TRACKING FIX" to defeat Auto Tracking. Refer to "SERVICE MODE SPECIFICATION (SELF-DIAGNOSTIC SYSTEM)" in "SERVICE NOTES."**
- 2. Connect the oscilloscope to Pin 30 (Envelope signal) on the TP Adjustment P.C.B. Use Pin 33 (Head Switch signal) as a trigger.**
- 3. Play back the Alignment Tape (VFMS0004H6C).**
- 4. Set the Screwdriver into the Hole (A) as shown.**

Fig. M6-1



- 5. Slowly move the A/C Head Unit to the direction "A" or "B" as shown so that the envelope is at maximum.**

Fig. M6-2



6. To find the center of the maximum period of the envelope, move the A/C Head Unit to confirm the limits on either side of the maximum period.

Note:

It will be possible to confirm step 6) after performing the following steps.

1. Exit the "I. TRACKING FIX" mode, then skip the "J. PG SHIFTER" mode to enter other modes (except these 2). Or, close the service mode.
2. Press the Tracking Control Up Button on the camcorder several times (count the number of times pressed) until the maximum envelope is reduced to 1/2.
3. Press the Tracking Control Down Button on the camcorder several times (count the number of times pressed) until the maximum envelope is reduced to 1/2.
4. If the number of pressing is not the same, readjust A/C Head horizontal position.

7.2.2.1.5. CONFIRMATION OF ENVELOPE OUTPUT

Purpose:

To achieve a satisfactory picture and secure precise tracking.

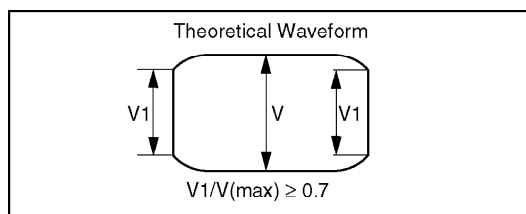
Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

1. Connect the oscilloscope to Pin 30 (Envelope signal) on the TP Adjustment P.C.B. Use Pin 33 (Head Switch signal) as a trigger.
2. Play back the Alignment Tape (VFMS0004H6C).
3. Confirm that the envelope waveform is as flat as possible ($V1/V(\max) 0.7$).

If adjustment is required, adjust S Post and/or T Post with "—" Screwdriver. Refer to "**ENVELOPE OUTPUT ADJUSTMENT.**"

Fig. M7



7.3. ELECTRICAL ADJUSTMENT

7.3.1. INITIAL GUIDELINE

The table below shows which adjustments are necessary according to the unit parts and individual parts to be replaced. Make sure to perform these adjustments shown below as necessary.

Adjustment Item		Replacement Parts																		
		MAIN C.B.A.	IC301(DIGITAL SIGNAL PROCESSOR)	IC303(EEPROM)	IC308(CAMERA MICROCONTROLLER)	IC309(HALL AMP)	IC602(TIMING SIGNAL GENERATOR)	IC605(SAMPLING HOLD&AGC CONTROL)	IC3001(LUMINANCE/CHROMINANCE SIGNAL PROCESS)	IC3002(TWIN CCD 1H DELAY)	X601	EVF C.B.A.	IC901(EVF DRIVE)	LCD C.B.A.	IC3001(RGB SIGNAL PROCESS/LCD PANEL INDICATOR CONTROL)	IC9002(OP AMP)	CCD C.B.A.	LENS UNIT	EVF UNIT	CYLINDER UNIT
Camera Section	Frequency Adjustment	○																		
	VCO Adjustment	○																		
	Burst/Sync Level Adjustment	○	○	○	○															
	Hall Amp Adjustment				○	○														
	Auto Focus Adjustment		○	○			○											○	○	
	Gamma Adjustment	○	○	○	○													○		
	A/D Input Level Adjustment							○												
	Iris PWM Adjustment	○	○	○		○		○										○		
	Pedestal Level Adjustment		○	○	○													○		
VCR Section	YH Level Adjustment		○	○	○													○		
	Auto white balance Adjustment	○	○	○	○			○									○			
	Playback Video Level Adjustment	○	○	○	○															
	Sync Tip Frequency Adjustment	○	○	○	○															
	Deviation Adjustment		○	○	○															
	Rec Level Adjustment	○	○	○	○				○	○	○									
	Comb Filter Gain Adjustment	○	○	○	○															
Monochrome EVF Section	YNR Adjustment		○	○	○				○	○										
	Head Switching Position Adjustment	○		○																○
	Vertical Size Adjustment											○	○	○					○	
	Centering Adjustment											○	○	○					○	
LCD Section	Brightness Adjustment											○	○	○					○	
	Focus Adjustment											○	○	○					○	
	PLL Adjustment	○		○																
	Pedestal Level Adjustment		○	○																
	Contrast Adjustment	○	○	○																
	RB Sub Pedestal Adjustment	○	○	○																
	RB Sub Contrast Adjustment	○	○	○																
	Color Gain Adjustment	○	○	○																
	VCOM level Adjustment	○	○	○																
Common bias Adjustment	○		○												○					

Note: ○ : Adjustment Item

7.3.2. TEST EQUIPMENT

To do all of the Electrical Adjustment, the following equipments are required.

1. Dual-Trace Oscilloscope

Voltage Range: 0.001 to 50 V/Div.

Frequency Range: DC to 50 MHz

Probes: 10:1, 1:1

2. DVM (Digital Volt Meter)

3. Frequency Counter

4. Color TV Monitor

5. VHS-C Alignment Tape (VFMS0004H6C)

6. Vectorscope

7. Plastic Tip Driver
8. Audio Video Cable (VJAW0032)
9. Power Supply for Interface Box.
10. Side L FPC Unit (LSEQ0595)
11. Personal Computer
 - PC: IBM PC/AT or compatible
 - OS: MS-DOS or MS-Windows
 - CPU: 486 or higher
 - Drive: 3.5 inch 1.44 MB floppy disk drive
 - Port: D-Sub-9-pin Serial or D-Sub-25-pin Serial
 - Monitor: VGA Color
12. PC-EVR Adjustment Program (VF0C2001DV10)
 - Note:**
Ask latest version when placing order for PC-EVR Adjustment program.
13. CAAS Kit (VFKW1000)
 - Interface Box (VFKW1000A)
 - Camera Connecting Cable (VFKW1000B)
 - 9 Pin RS-232C Cable (VFKW1000C)
 - 25 Pin RS-232C Cable (VFKW1000D)
14. TP Adjustment Cable 40P (LSUP0005A)
15. TP Adjustment P.C.B. 40P (VFKW0123B)
16. TP Clip 36P (LSUP0005C)
 - (adjustment equipment with using Infinity Lens)
17. Lighting (Light Box (VFK1164LBX1) is recommended)
18. Infinity Lens (VFK1164TCM02)
 - (with Focus Chart)
19. 49 mm Ring (VFK1164TAR49)
20. Gray Scale Chart (VFK1164TFGS2)
21. Color Bar Chart (VFK1164TFCB2)
22. White Chart (VFK1164TFWC2)
23. Color Conversion Filter (VFK1164TFCT2)

(adjustment equipment without using Infinity Lens)

24. Lighting (Halogen Lamp (2000 lux))

25. Reflection Chart

Reflection Chart Set (VFKS003-N)

(Reflection Chart Set consists of Gray Scale Chart (VFKS003A), Color Bar Chart (VFKS003B), Registration Chart (VFKS003C), and Resolution Chart (VFKS003D))

Gray Scale Chart (VFKS003A)

Color Bar Chart (VFKS003B) Registration Chart (VFKS003C)

Resolution Chart (VFKS003D) Color Chip Chart (VFKW0116)

26. Color Temperature Conversion Filter 80A or equivalent Color Temperature Conversion Filter

27. Color Compensating Filter CC05M

28. A.W.B. Adjustment Fixture (VFKW0066)

7.3.3. PREPARATION

1. Connect the Interface Box to the TP Board with Camera Connecting cable (VFKW1000B).

2. Connect the Interface Box to the Personal Computer with RS-232C cable (VFKW1000C or VFKW1000D).

3. Connect the TP Board to S301 on the camcorder. Refer to "HOW TO USE TP BOARD" in "SERVICE NOTES."

4. Connect the AC Adaptor and camcorder, and apply DC +6 V to the Interface Box.

5. Power on the camcorder.

Note:

In case that the camcorder is in DEMO mode, release DEMO mode as follows:

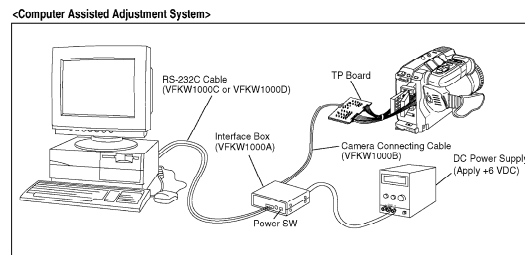
Power off the camcorder first. Then, disconnect the TP Board, and power on the camcorder. Then, press the STOP button over 5 seconds.

CAUTION:

1. Do not connect or disconnect any cables while the camcorder is powered on.

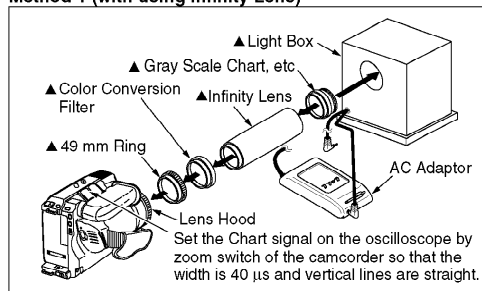
2. Before using the TP Board, be sure to clean S301 pattern with

- alcohol and confirm that there is no dust in the TP Clip.
3. To achieve the best adjustment results, warm up the camcorder for approx. 30 minutes before adjustment.
 4. When removing the TP Clip from S301 on the camcorder, be sure to pinch the grips.

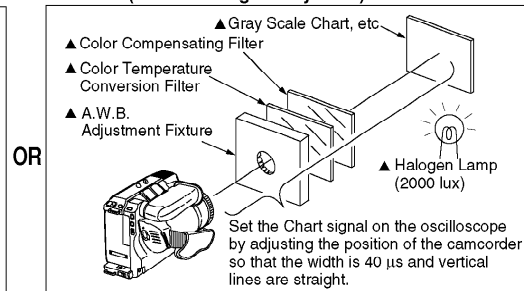


6. Set up the camcorder for adjustment as follows:

Method 1 (with using Infinity Lens)



Method 2 (without using Infinity Lens)



Note: (in Method 1)

1. Connect the 49 mm Ring to the Infinity Lens. Then, insert it into the Light Box.
2. Set the camcorder so that the Lens Hood of the camcorder attaches straight and firmly against the 49 mm Ring. When performing this operation, ensure that there is no gap between the Lens Hood and the 49 mm Ring and that no external light can enter.

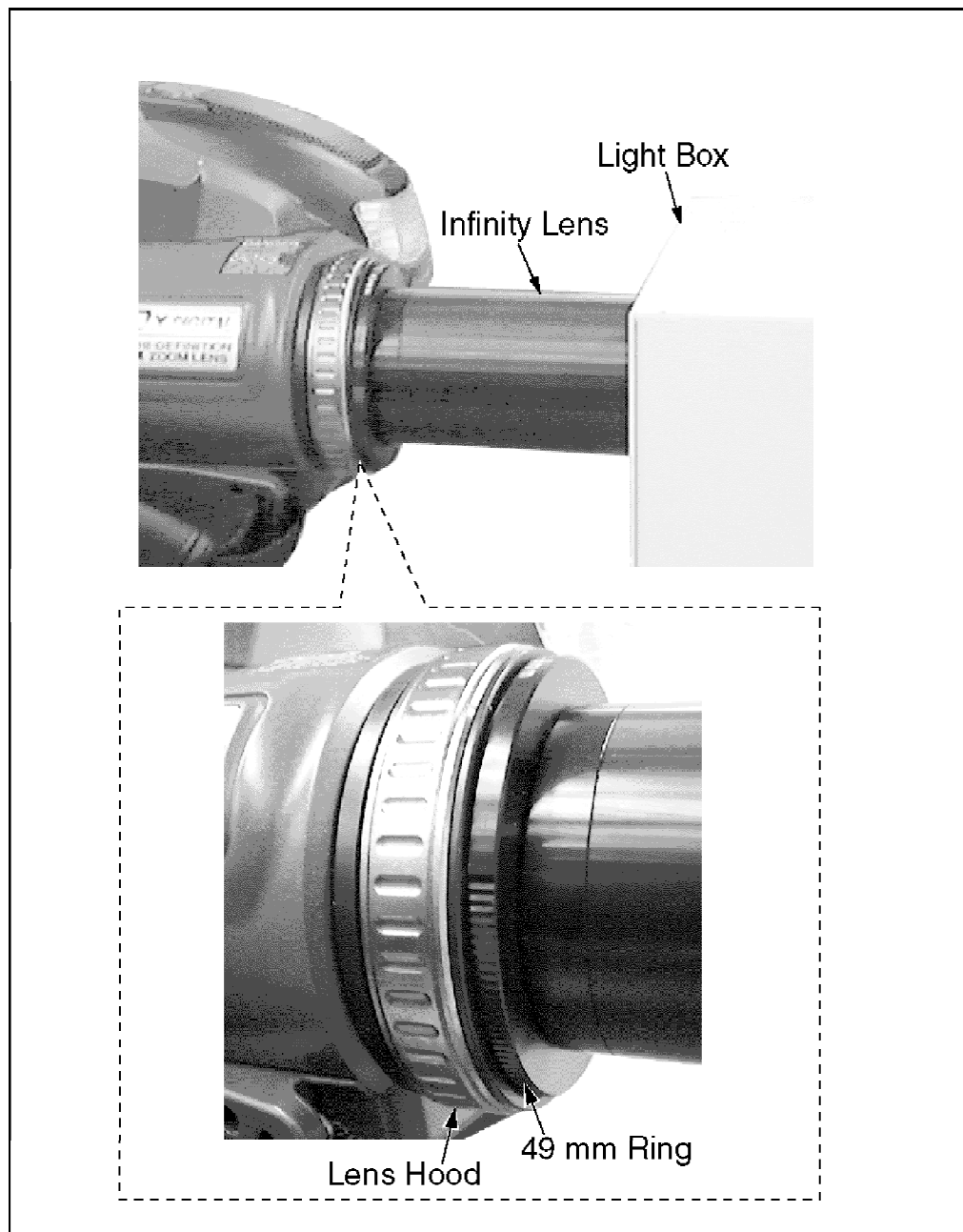


Fig. E1-4

For necessary equipments marked s in Fig. E1-2 and E1-3, refer to the following table.

Adjustment Item			Method 1										Method 2									
			Light Box	Infinity Lens / 49 mm Ring	Focus Chart	Gray Scale Chart	Color Bar Chart	White Chart	Color Conversion Filter	Halogen Lamp	Any Object (High contrast)	Gray Scale Chart	Color Bar Chart	Color Chip Chart	White Chart	Color Temperature Conversion Filter	Color Compensating Filter	A.W.B. Adjustment Fixture				
Camera Section	Frequency Adjustment	※																				
	VCO Adjustment																					
	Burst/Sync Level Adjustment																					
	Hall Amp Adjustment																					
	Auto Focus Adjustment (Automatic Adjustment)	Note 2	○	○																		
	Gamma Adjustment		○	○					○		○											
	A/D Input Level Adjustment		○	○					○		○											
	Iris PWM Adjustment		○	○					○		○											
	Pedestal Level Adjustment		○	○					○		○											
	YH Level Adjustment		○	○		○					○											
	Auto White Balance Adjustment																					
	1 Indoor Preset Adjustment		○	○					○													
	2 Indoor Input Adjustment		○	○									○									
	3 Color Phase & R-Y, B-Y Gain Adjustment (Indoor Mode)		○	○		○							○									
VCR Section	4 Outdoor Preset Adjustment		○	○					○													
	5 Outdoor Input Adjustment		○	○					○													
	6 Color Phase & R-Y, B-Y Gain Adjustment (Outdoor Mode)		○	○		○			○				○		○	○	○					
	Playback Video Level Adjustment																					
	Sync Tip Frequency Adjustment																					
	Deviation Adjustment																					
Monochrome EVF Section	Rec Level Adjustment																					
	Comb Filter Gain Adjustment		○	○		○			○		○											
	YNR Adjustment																					
	Head Switching Position Adjustment																					
	Vertical Size Adjustment	※																				
LCD Section	Centering Adjustment	※																				
	Brightness Adjustment	※																				
	Focus Adjustment	※																				
	PLL Adjustment																					
	Pedestal Level Adjustment																					
	Contrast Adjustment																					
	RB Sub Pedestal Level Adjustment																					
	RB Sub Contrast Level Adjustment																					

Note 1: Auto Focus adjustment (Automatic adjustment) is available only for Method 1.

Note 2: When performing Auto Focus Adjustment (Automatic Adjustment), be sure to perform under low light conditions.

To carry out this adjustment using the Light Box, create low light conditions artificially as follows.

Set the shutter speed to 1/10,000 or 1/4,000 on the menu display and confirm that there is no flicker in the Focus Chart image at the selected shutter speed.

7.3.4. SET UP OF PC-EVR ADJUSTMENT PROGRAM

1. Turn on the Personal Computer.

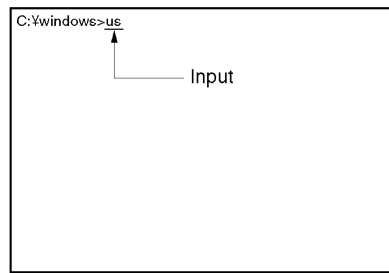
Windows ® 95 will be set up automatically.

2. Restart it in MS-DOS mode.

3. Change the current directory to the one including the PC-EVR Adjustment Program and start up the PC-EVR Adjustment Program as follows.

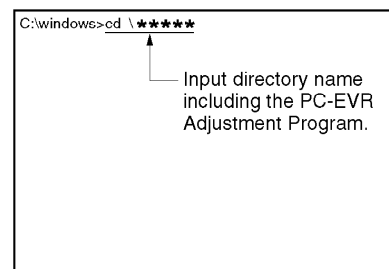
A. If MS-DOS is Japanese mode, input "us," and then press "ENTER" key to be US mode on.

Fig.E2-1



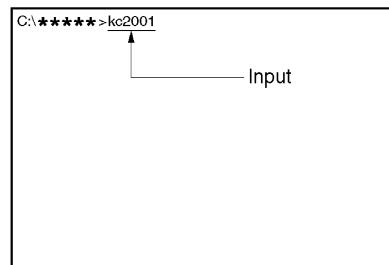
- B. Input "cd \,*****" and then press "ENTER" key to change the directory to the one including the PC-EVR Adjustment Program.**

Fig.E2-2



- C. Input "kc2001," and then press "ENTER" key to start up the PC-EVR Adjustment Program.**

Fig.E2-3




"Select Model Number Menu" will be displayed.

- 4. Select the model number which you are servicing, and then press "Enter" key. The starting display will be displayed.**
- 5. Perform set up items according to menu until "Main Menu" is displayed.**
- 6. Select "Sub Menu" to adjust or check, etc. the camcorder.**

7.3.5. HOW TO USE MAIN MENU

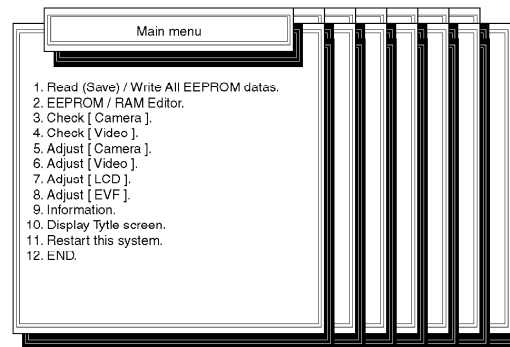
7.3.5.1. Main Menu

Select "Sub Menu" by pressing   (UP/DOWN) key in Main Menu. Then, adjust or check the camcorder according to the menu. Then, press "ENTER" key. "Sub Menu" will be displayed.

Note:

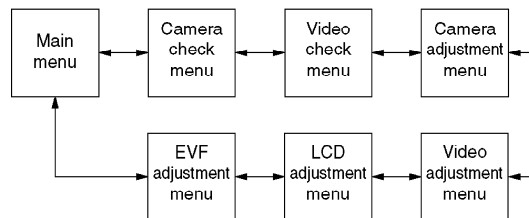
Menu 5 through 8 are needed for adjustment.

Fig.E3-1



Also, by pressing   key, "Sub Menu" can be seen in order below.

Fig.E3-2



Note:

The adjusted data is stored to EEPROM IC after each adjustment.

7.3.6. VR ADJUSTMENT

7.3.6.1. CAMERA SECTION

7.3.6.1.1. Frequency Adjustment

Purpose:

To set the chroma subcarrier.

Symptom of Misadjustment:

The picture will be no color. (The burst shifts)

Test Point :

TP601 (Main C.B.A.)

Adjustment :

C610 (Main C.B.A.)

Specification :

14.31818 MHz±80 Hz

Input :

Mode :

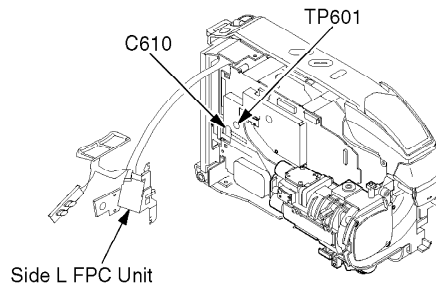
Equipment :

Frequency counter

Adjustment Procedure:

- 1. Remove the Side Case (L) Unit to gain access to TP601 and C610 on the Main C.B.A.
Connect the Side L FPC unit to the camcorder.**
- 2. Connect the Frequency counter to TP601 on the Main C.B.A.**
- 3. Adjust C610 on the Main C.B.A. so that the frequency becomes 14.31818 MHz \pm 80 Hz.**

Fig, E4



7.3.6.2. MONOCHROME EVF SECTION

Note:

Camcorder need NOT to be powered off and on after each adjustment procedure.

Preparation

- 1. Before adjusting the Monochrome EVF, Camera section and VCR section adjustments must be completely adjusted.**
- 2. Remove the EVF Case B Unit to gain access to VRs on the EVF C.B.A. (Refer to "Disassembly/Assembly Procedures of Cabinet".)**

7.3.6.2.1. Vertical Size Adjustment

Purpose:

To set the standard vertical size on the EVF picture.

Symptom of Misadjustment:

The vertical EVF picture size will be abnormal.

Test Point :

Adjustment :

VR901 (EVF C.B.A.)

Specification :

Best Vertical size

Input :

VHS-C Alignment Tape (VFMS0004H6C)

Mode :

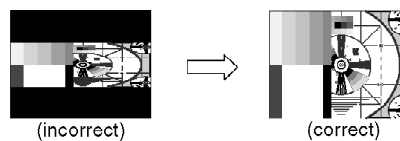
PB

Equipment :

Adjustment Procedure:

- 1. Playback the VHS-C Alignment Tape.**
- 2. Adjust the VERTICAL SIZE CONTROL (VR901) so that the vertical picture size is correct.**

Fig. E4-2



7.3.6.2.2. Centering Adjustment

Purpose:

To set the optimum picture position on the EVF picture.

Symptom of Misadjustment:

The EVF picture will be shifted.

Test Point :

Adjustment :

Deflection Yoke Centering Magnet

Specification :

The picture position becomes centered on the EVF picture

Input :

VHS-C Alignment Tape (VFMS0004H6C)

Mode :

PB

Equipment :

Adjustment Procedure:

- 1. Playback the VHS-C Alignment Tape.**
- 2. Adjust the Deflection Yoke Centering Magnets by turning them so that the picture is centered in the Viewfinder.**

Fig. E4-3

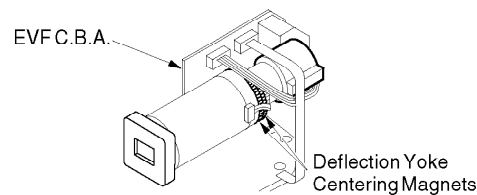
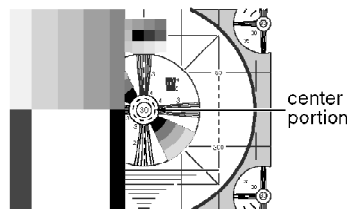


Fig. E4-4



- 3. Press MENU button and confirm that the menu displays in proper position.**

7.3.6.2.3. Brightness Adjustment

Purpose:

To set the optimum EVF brightness level.

Symptom of Misadjustment:

The EVF picture will be too white or black.

Test Point :

Adjustment :

VR903 (EVF C.B.A.)

Specification :

Natural Gradation

Input :

VHS-C Alignment Tape (VFMS0004H6C)

Mode :

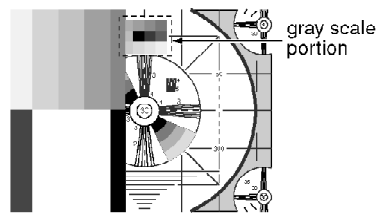
PB

Equipment :

Adjustment Procedure:

- 1. Playback the VHS-C Alignment Tape.**
- 2. Adjust the BRIGHTNESS CONTROL (VR903) so that the brightness of gray scale portion in the Viewfinder is a natural gradation.**

Fig. E4-5



7.3.6.2.4. Focus Adjustment

Purpose:

To set the optimum focus on the EVF picture.

Symptom of Misadjustment:

The EVF picture will be out of focus.

Test Point :

Adjustment :

VR902 (EVF C.B.A.)

Specification :

Optimum focus

Input :

VHS-C Alignment Tape (VFMS0004H6C)

Mode :

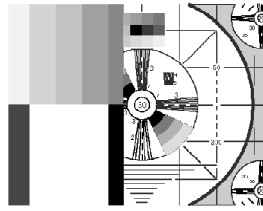
PB

Equipment :

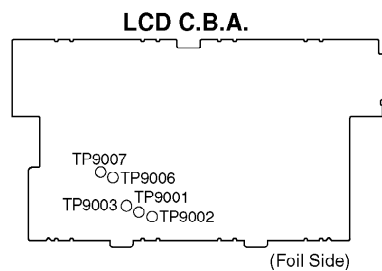
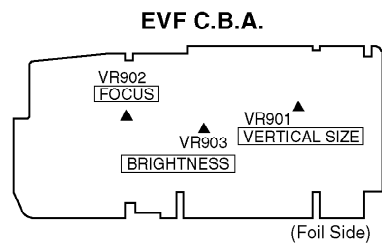
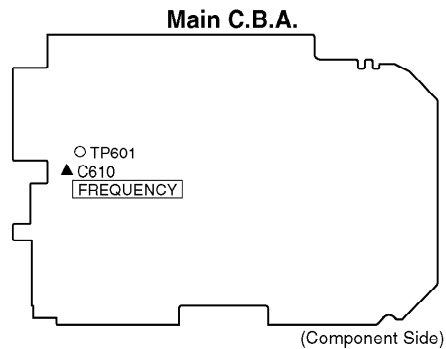
Adjustment Procedure:

- 1. Playback the VHS-C Alignment Tape.**
- 2. Adjust the FOCUS CONTROL (VR902) so that the monoscope portion (lines, numbers) in the viewfinder is in the optimum focus.**

Fig. E4-6



7.3.7. TEST POINTS AND CONTROL LOCATION



Test Point Information

○ Test Point with no Test Pin.

8. SCHEMATIC DIAGRAMS

8.1. SCHEMATIC DIAGRAM & CIRCUIT BOARD LAYOUT NOTES

8.2. MAIN / PC JACK SCHEMATIC DIAGRAMS

8.3. LCD / RELAY SCHEMATIC DIAGRAMS

8.4. EVF SCHEMATIC DIAGRAM

8.5. HEAD AMP SCHEMATIC DIAGRAM

**8.6. TOP OPERATION / SIDE L FPC / VCR OPERATION /
MECHANISM FPC SCHEMATIC DIAGRAMS**

8.7. MIC/IR / BATTERY CATCHER SCHEMATIC DIAGRAMS

8.8. INTERCONNECTION SCHEMATIC DIAGRAM

8.9. SIGNAL WAVEFORMS

8.10. VOLTAGE CHART

9. CIRCUIT BOARD LAYOUT

9.1. MAIN / PC JACK C.B.A.

9.2. LCD C.B.A.

9.3. EVF C.B.A.

9.4. RELAY C.B.A.

9.5. MECHANISM FPC UNIT

10. BLOCK DIAGRAMS

10.1. OVERALL BLOCK DIAGRAM

10.2. CCD DRIVE BLOCK DIAGRAM

10.3. PROCESS BLOCK DIAGRAM

10.4. VIDEO BLOCK DIAGRAM

10.5. AUDIO BLOCK DIAGRAM

10.6. SYSTEM CONTROL BLOCK DIAGRAM

10.7. SERVO BLOCK DIAGRAM

10.8. AF BLOCK DIAGRAM

10.9. POWER SUPPLY BLOCK DIAGRAM

10.10. LCD POWER BLOCK DIAGRAM

10.11. LCD BLOCK DIAGRAM

10.12. EVF BLOCK DIAGRAM

10.13. TROUBLESHOOTING HINTS FOR THE CF CARD ERROR

11. EXPLODED VIEWS

11.1. VCR MECHANISM SECTION

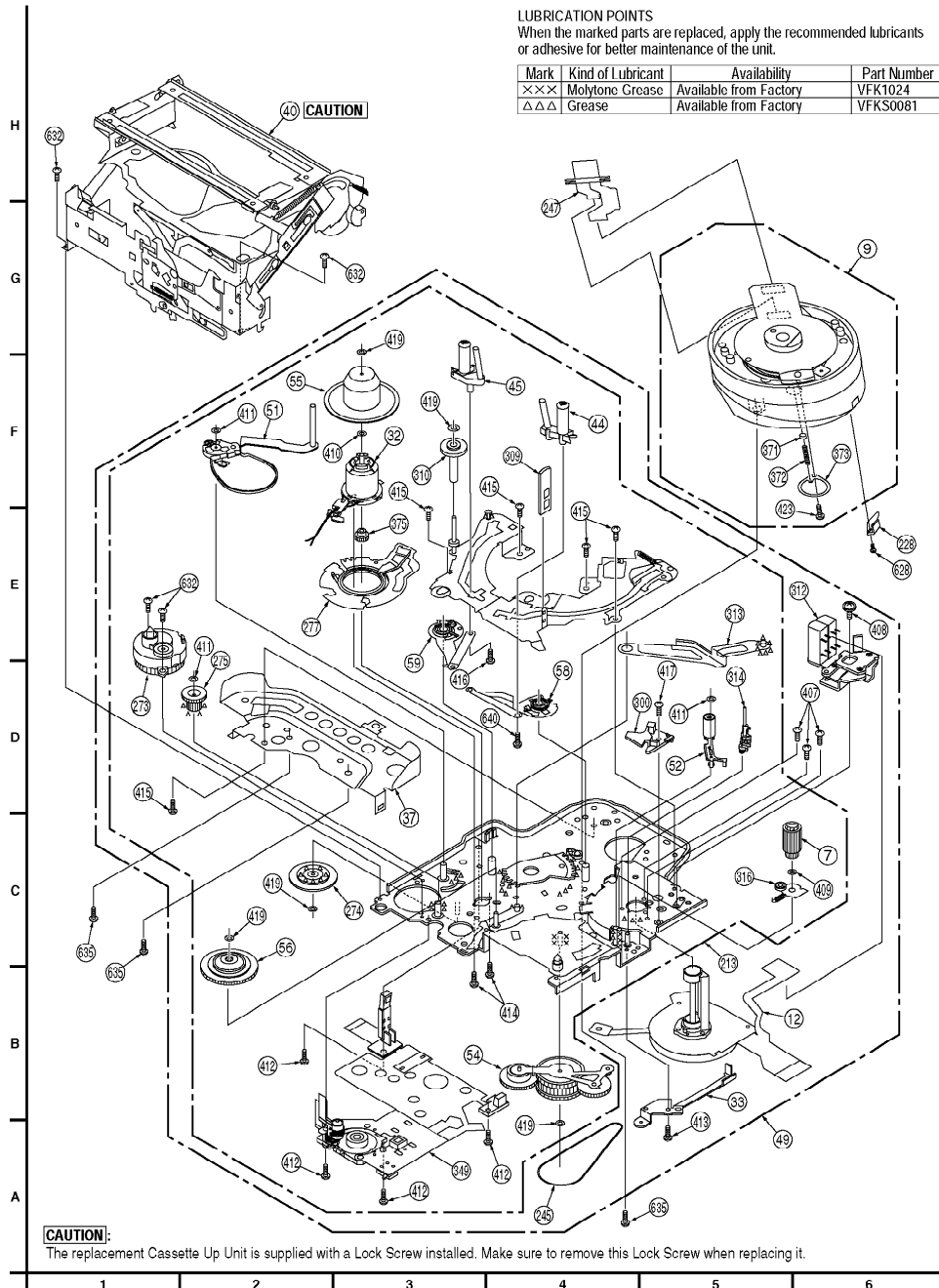
1 VCR MECHANISM SECTION

Note: Parts with no Ref. No. in "EXPLODED VIEW" are not supplied.
And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
×××	Molytane Grease	Available from Factory	VFK1024
△△△	Grease	Available from Factory	VFKS0081




11.2. FRAME SECTION (1)

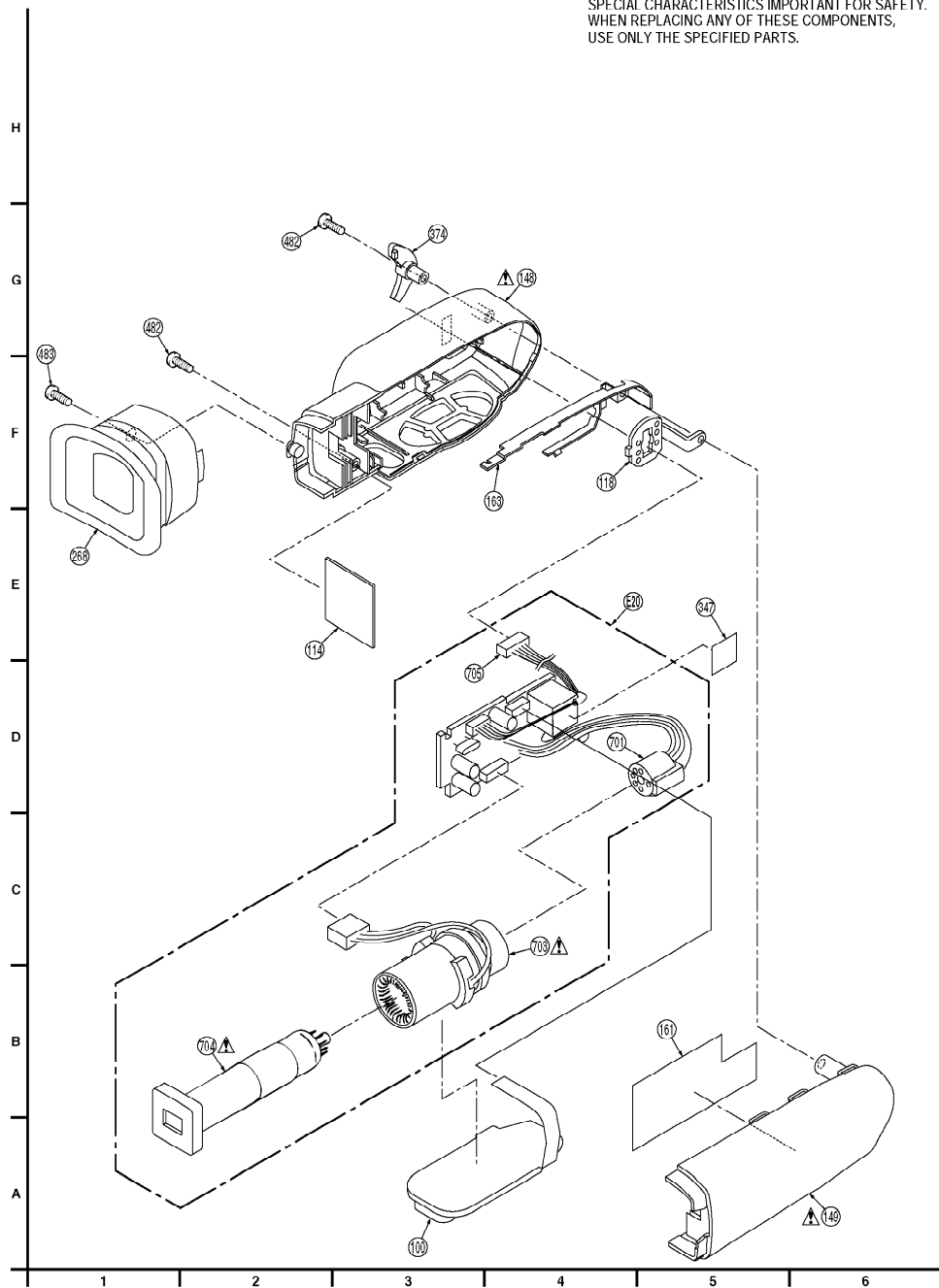
11.3. FRAME SECTION (2)

11.4. EVF SECTION

4 EVF SECTION

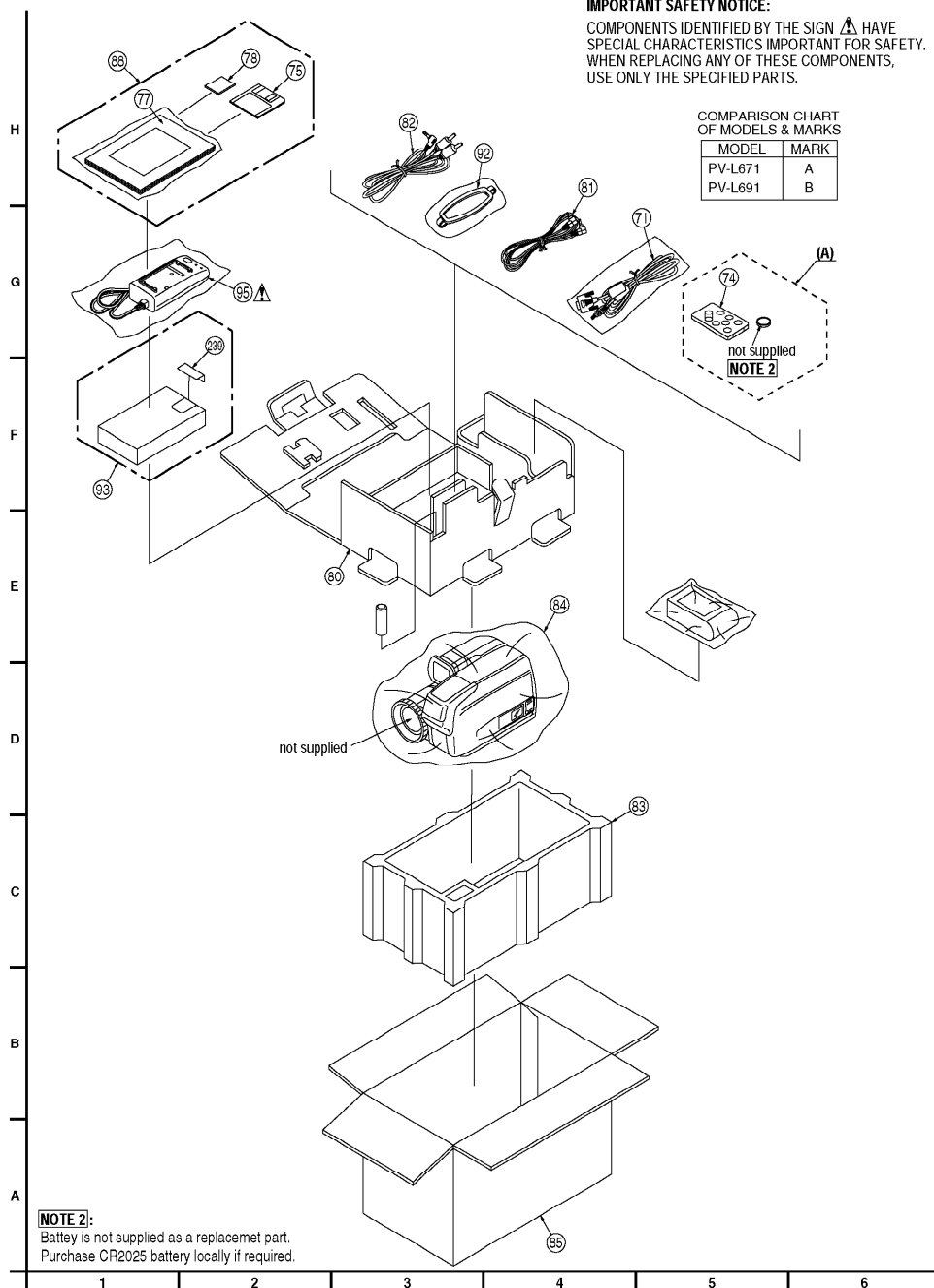
IMPORTANT SAFETY NOTICE:

COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



11.5. PACKING PARTS AND ACCESSORIES SECTION

5 PACKING PARTS AND ACCESSORIES SECTION



12. REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

12.1. REPLACEMENT NOTES

12.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE

Components identified by the sign  have special characteristics important for safety. When replacing any of these components, use only the specified parts.

3. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

4. Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. Parts with mark "VED" in the Remarks column are supplied from VED. Others are supplied from MKI.
7. Item numbers with capital letter E (Example: E10, E20,...) in the Ref. No. column are shown in the exploded views.
8. Parts whose Ref. Nos. are the same are interchangeable as replacement parts. Any of these parts may be ordered and used as a replacement part.

12.1.2. Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Abbreviation
RTL: Retention Time Limited
This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.

3. Cut Washers (Ref No. 409, 411, and 419) are not reusable. If removed, install a new one.
4. After replacing Mechanism Chassis Ass'y (Ref. No. 49) or Mechanism Chassis Sub Ass'y (Ref. No. 213), perform the Tape Interchangeability Adjustment procedures. Refer to "**TAPE INTERCHANGEABILITY ADJUSTMENT**."
5. Lamp Kit (Ref No. 340) replacement note:
Lamp is supplied as a Lamp Kit only (Kit No. VULS0001) which contains Lamp, Cushion, and Explanation Sheet.

12.1.3. Electrical Replacement Notes

1. Unless otherwise specified;
All resistors are in Ω , K = 1,000 Ω , M = 1,000 k Ω .
2. Abbreviation
RTL: Retention Time Limited
This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
NR: Non Repairable Board Ass'y
MGF CHIP: Metal Glaze Film Chip
C CHIP: Ceramic Chip
COMPLX CMP: Complex Component
W FLMPRF: Wirewound Flameproof
C.B.A.: Circuit Board Assembly
P.C.B.: Printed Circuit Board
E.S.D.: Electrostatically Sensitive Devices
3. SERVICE OF CHIP PARTS
When servicing chip parts, please use a soldering iron of less than 30 W. Refer to "**IC, TRANSISTOR AND CHIP PART INFORMATION**" page.
4. When replacing 0 Ω resistor, a wire can be substituted for it.
5. IC306 replacement note:
When replacing this IC, be sure to write the initial data with PC-EVR Adjustment Program.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B








12.2. MECHANICAL REPLACEMENT PARTS LISTS




COMPARISON CHART OF MODELS & MARKS



MODEL	MARK
PV-L671	A
PV-L691	B

MECHANICAL REPLACEMENT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
7	VDGW0072	TAKE GEAR	1
9	VEGS0438	CYLINDER UNIT (A)	1
9	LSEG0004	CYLINDER UNIT (A)	1
9	VEGS0439	CYLINDER UNIT (B)	1
9	LSEG0005	CYLINDER UNIT (B)	1
12	VEMS0337	CAPSTAN UNIT	1
13	LSEM0028	FOCUS MOTOR UNIT	2
15	LSGQ0031	HAND STRAP	2
16	LSFL0078	OPTICAL FILTER	2
17	VKFW0067	EVF COVER	3
22	LSMA0477	SPRING SUPPORTER	2
29	LSMD0264	BACK UP COVER	3
30	LSEQ0589	BATTERY CATCHER UNIT	3
31	LSMG0080	FILTER RUBBER	2
32	VEMW0087	LOADING MOTOR UNIT,2W	1
33	VMAW0745	P.C.B. ANGLE	1
37	VMAW0744	MECHANISM SUPPORT ANGLE	1
40	VXYS1369	CASSETTE UP UNIT	1
44	VXDW0196	TAKEUP POST UNIT	1
45	VXDW0187	SUPPLY POST UNIT	1
48	LSXN0019	LENS UNIT	2
49	LSXY0250	MECHANISM CHASSIS ASS'Y	1 RTL
50	LSXY0216	VCR MECHANISM CHASSIS ASS'Y (A)	 2 / RTL
50	LSXY0217	VCR MECHANISM CHASSIS ASS'Y (B)	 2 / RTL
51	VXLW0080	TENSION UNIT	1
52	VXLS1131	PINCH ARM UNIT	1
54	VXLS1108	IDLER ARM UNIT	1
55	VXPW0025	REEL TABLE UNIT	1
56	VXPW0024	REV CLUTCH	1
58	VXLW0078	TAKEUP LOADING ARM UNIT	1
59	VXLW0077	SUPPLY LOADING ARM UNIT	1
61	LSYK0719	ELECTRONIC VIEWFINDER UNIT	2
67	LSYK0529	CASSETTE COVER UNIT	3
71	LSJA0276	PC CONNECTION CABLE W/PLUG,DC15V,DC-15V	5
74	VSQW0038	INFRARED REMOTE CONTROL UNIT (A)	5
75	LSFT0249	DRIVER SOFTWARE FD	5

Ref. No.	Part No.	Part Name & Description	Remarks
77	LSQT0443A	INSTRUCTION BOOK (A)	5
77	LSQT0418A	INSTRUCTION BOOK (B)	5
78	LSFA0009	CF CARD	5
80	LSPG1085	ACCESSORY PACKING CASE,PAPER	5
81	LSJA0302	DC CABLE W/PLUG,DC6V	5
82	LSJA0283	AUDIO/VIDEO CABLE W/PLUG,0V	5
83	LSPN0212	CUSHION,STYROFORM	5
84	VPFW0049	BAG,POLYETHYLENE	5
85	LSPG1140	PACKING CASE,PAPER (A)	5
85	LSPG1135	PACKING CASE,PAPER (B)	5
88	LSQF0443	FAN BAG (A)	5
88	LSQF0418	FAN BAG (B)	5
92	LSFC0012	SHOULDER STRAP	5
93	VYMW0009	CASSETTE ADAPTOR	5
95	PV-A19-A	AC ADAPTOR UNIT	 5
100	VEQW0279	VCR OPERATION UNIT	4
106	LSGL0347	POWER LED PANEL	2
107	LSGT0049	EJECT KNOB	3
111	LSGU0177	DISPLAY BUTTON	3
114	LSDL0083	DUST COVER	4
115	LSKM0649	SIDE CASE L,ABS RESIN (A)	 2
115	LSKM0648	SIDE CASE L,ABS RESIN (B)	 2
117	LSMA0478	TRIPOD FRAME	2
118	LSMA0416	EVF PLATE,STEEL	4
119	LSMA0476	EVF ANGLE	2
128	LSXM0011	MICROPHONE UNIT (A)	3
128	LSXM0010	MICROPHONE UNIT (B)	3
130	LSEQ0555	TOP OPERATION UNIT	3
131	LSEQ0596	SIDE L FLEXIBLE PRINTED CIRCUIT UNIT	2
138	LSGU0138	TOP OPERATION BUTTON	3
148	LSKM0613	EVF CASE A,ABS RESIN	 4
149	LSKM0614	EVF CASE B,ABS RESIN	 4
151	LSKM0642	SIDE CASE R,ABS RESIN	 3
161	LSQL1070	CAUTION LABEL	4
163	LSSC0324	EVF ESD PLATE,STEEL	4
164	LSQL1019	CAUTION LABEL	2
170	LSGU0176	EIS BUTTON	3
182	LSQL1034	LENS LABEL	2
183	LSMD0267	ARM HOLDER	2
184	LSXA0287	SENSOR SHIELD CASE UNIT,STEEL	2
185	VGLW0089	INFRARED PANEL (A)	2
186	VGFW0020	LIGHT PROTECTOR	3
187	LSMD0266	R HINGE	3
188	VMRW0025	LIGHT REFLECTOR	3
192	LSSC0444	LIGHT SHEET,AL	3
194	LSGT0059	DIGITAL SELECT KNOB	3
200	LSGT0051	PHOTO SELECT KNOB	3
203	LSXY0205	LAMP UNIT	 3
206	LSMA0473	STRAP ANGLE A	3
209	LSMA0475	GRIP ANGLE	2
211	LSXY0245	LIQUID CRYSTAL DISPLAY PANEL UNIT	3
212	LSXY0207	LEAD LIGHT PANEL UNIT	3
213	LSXY0214	MECHANISM CHASSIS SUB ASS'Y	1

Ref. No.	Part No.	Part Name & Description	Remarks
214	LSMZ0213	TAPE GUIDE	3
215	LSMZ0210	GUIDE COVER	3
216	LSMZ0214	PROTECTOR	3
218	LSEK0401	CF CARD CONNECTOR UNIT	3
219	LSYK0547	LENS HOOD UNIT	2
221	VEMW0085	ZOOM MOTOR UNIT	2
228	VMDW0357	BULGE CHIP (A)	1
228	VMDW0374	BULGE CHIP (B)	1
229	LSMB0248	TAPE GUIDE SPRING	3
234	VMTW0023	LENS RUBBER	2
239	VKFS1021	BATTERY COMPARTMENT LID	5
241	LSFL0074	INFRARED CUT FILTER	2
242	LSDS0002	OPTICAL FILTER STOPPER	2
245	VDVW0003	CAPSTAN BELT	1
247	VJBW1626F	CYLINDER CABLE W/OUT PLUG,DC5V	1
248	VMFW0100	SHEET,NYLON-RAYON	3
250	LSQL1018	LIGHT CAUTION LABEL	 2
268	LSYK0238	EYE CAP UNIT	4
273	VXYW0195	REDUCTION GEAR UNIT	1
274	VDGW0063	REDUCTION GEAR A	1
275	VDGW0064	REDUCTION GEAR B	1
277	VXYW0194	MAIN CAM UNIT	1
286	LSGT0052	LIGHT KNOB	3
290	LSSC0413	ESD PLATE,STEEL	2
295	LSMB0247	SHUTTER SPRING	3
297	VMDW0512	LENS PIECE	2
300	VMDW0494	OPENER	1
301	LSML0126	ARM	2
307	LSSC0329	LENS ESD PLATE,STEEL	2
309	VMDW0486	PINCH TAPE GUIDE	1
310	VXJW0095	IMPEDANCE ROLLER UNIT	1
312	VEHS0588	AUDIO CONTROL HEAD UNIT	1
313	VMLW0083	PINCH TOGGLE	1
314	VXLW0081	P5 ARM UNIT	1
316	VXLS1125	REV BRAKE ARM UNIT	1
320	LSYK0549	MICROPHONE CASE UNIT,ABS RESIN	3
321	LSKF0333	WING	3
335	LSKM0629	LCD CASE B,ABS RESIN	 3
340	VULS0001	LAMP KIT	 3
345	LSMF0057	SHEET,NYLON-RAYON	3
347	VMFS0134	SHEET,NYLON-RAYON	4
348	LSJW0022	FLEXIBLE FLAT CABLE W/OUT PLUG,DC13V,DC-15V	3
349	LSEQ0540	MECHANISM FLEXIBLE PRINTED CIRCUIT UNIT	1
350	LSSC0489	ESD PLATE,STEEL	3
355	LSYK0717	LCD CASE A UNIT,ABS RESIN (A)	3
355	LSYK0715	LCD CASE A UNIT,ABS RESIN (B)	3
365	LSMP0318	CASSETTE FRAME	3
366	LSXA0332	LCD SHAFT UNIT	3
371	LSSA0002	EARTH CONTACT	1
372	LSMB0168	CONTACT SPRING	1
373	LSMA0336	CONTACT PLATE,STEINLESS	1
374	LSKM0618	EVF PIECE	4
375	VDGW0059	MOTOR GEAR	1

Ref. No.	Part No.	Part Name & Description	Remarks
376	LSSC0422	ALUMINUM FOIL	3
377	LSSC0423	ALUMINUM FOIL	3
407	XQN16+A32	SCREW,STEEL	1
408	VHDW0124	SCREW W/WASHER,STEEL	1
409	VMXW0217	CUT WASHER,STEEL	1
410	XWGV15Z32G	POLY SLIDER WASHER	1
411	VMXW0213	CUT WASHER,STEEL	1
412	XQN2+B35	SCREW,STEEL	1
413	XQN2+A22	SCREW,STEEL	1
414	XQN14+A32	SCREW,STEEL	1
415	XQN2+B22	SCREW,STEEL	1
416	XQN14+BJ25FZ	SCREW,STEEL	1
417	XQN2+B2	SCREW,STEEL	1
419	VMX2026	CUT WASHER,STEEL	1
421	XQN16+BF4FN	SCREW,STEEL	2
423	XQN16+B3FN	SCREW,STEEL	1
469	XQN2+BF4FXK	SCREW,STEEL	3
472	VHDW0102	SCREW,STEEL	3
473	VHDW0100	SCREW,STEEL	2
482	XQN2+CJ12FXK	SCREW,STEEL	4
483	XQN2+BJ4FXK	SCREW,STEEL	4
501	XQN16+CJ5FY	SCREW,STEEL	2
502	XQN16+CJ6	SCREW,STEEL	2
504	XQN2+CF3	SCREW,STEEL	2
533	XQN2+BF5FXK	SCREW,STEEL	2,3
586	XQN2+BJ5FXK	SCREW,STEEL	2,3
604	XQN2+BJ8FXK	SCREW,STEEL	3
617	XQN2+BJ10FXK	SCREW,STEEL	3
628	XQN16+B3FU	SCREW,STEEL	1
630	VMXW0175	WASHER,NYLON	2
632	XQN14+B3	SCREW,STEEL	1
635	XQN16+C5FU	SCREW,STEEL	1
637	XQN2+CF10FU	SCREW,STEEL	2
640	LSHD0054	SCREW,STEEL	1
643	LSMC0103	SPRING WASHER,STAINLESS	2
701	VEKW1639	CRT SOCKET UNIT	4
703	ELY05V583C	DEFLECTION YOKE	 4
704	M01LSX07WB01	CRT	 4
705	LSEK0375	CONNECTOR CABLE W/PLUG,DC5V	4
706	VMZW0668	INSULATION SHEET,PLASTIC	3
710	VEKW1791	PC JACK CABLE W/PLUG,DC15V.DC-15V	2
E10	LSEP8070E1	MAIN C.B.A. (A)	2 RTL
E10	LSEP8070F1	MAIN C.B.A. (B)	2 RTL
E20	LSEQ0598	ELECTRONIC VIEWFINDER C.B.A.	4 RTL
E40	LSEP8118A1	LIQUID CRYSTAL DISPLAY C.B.A.	3 RTL
E50	LSEP8075A1	RELAY C.B.A.	3
E60	LSEQ0610	CCD C.B.A. NR	2
E70	LSEP8050A1	PC JACK C.B.A.	2 RTL

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFKS002	LIGHT BOX W/CHARTS SET	
	VFKS002A	GLAY SCALE CHART	
	VFKS002B	COLOR BAR CHART	
	VFKS002C	REGISTRATION CHART	
	VFKS002D	RESOLUTION CHART	
	VFKS002Y	LIGHT BOX	
	VFKS003-N	REFLECTION CHART SET	
	VFKS003A	GLAY SCALE CHART	
	VFKS003B	COLOR BAR CHART	
	VFKS003C	REGISTRATION CHART	
	VFKS003D	RESOLUTION CHART	
	VFK1164TFWC2	WHITE CHART	VED
	VFK1164TFGS2	GRAY SCALE CHART	VED
	VFK1164TCB2	COLOR BAR CHART	VED
	VFK1164TFCT2	CONVERSION FILTER (C-14)	VED
	VFK1164LBX1	LIGHT BOX	VED
	VFK1164TCM02	INFINITY LENS (WITH FOCUS CHART)	VED
	VFK1164TLA01	LAMP	VED
	VFK1164TAR58	ATTACHMENT RING (58mm)	VED
	VFK1164TAR55	ATTACHMENT RING (55mm)	VED
	VFK1164TAR52	ATTACHMENT RING (52mm)	VED
	VFK1164TAR49	ATTACHMENT RING (49mm)	VED
	VFK1164TAR46	ATTACHMENT RING (46mm)	VED
	VFK1164TAR43	ATTACHMENT RING (43mm)	VED
	VFK1164TAR37	ATTACHMENT RING (37mm)	VED
	VFK1164TAR3A	ATTACHMENT RING (30.5mm)	VED
	VFK1164TAR27	ATTACHMENT RING (27mm)	VED
	VFMS0004H6C	VHS-C ALIGNMENT TAPE	
	VFMW0001C	VHS-C ALIGNMENT TAPE	
	VFK27	HEAD CLEANING STICK	
	VFKS0081	GREASE	
	LSUQ0002	GREASE	
	VFK1024	MOLYTONE GREASE	
	VUVS0007	EXTENSION CABLE 12P	
	LSUA0020	EXTENSION CABLE 20P	
	VUVS0012	EXTENSION CABLE 22P	
	VUVS0015	EXTENSION CABLE 28P	
	LSUP0005A	TP ADJUSTMENT CABLE 40P	
	VFKW0123B	TP ADJUSTMENT PCB 40P	
	LSUP0005C	TP CLIP 36P	
	VFKW0066	A.W.B. ADJUSTMENT FIXTURE	
	VFKW0116	COLOR CHIP CHART	
	VFKW1000	CAAS KIT	
	VFKW1000A	INTERFACE BOX	
	VFKW1000B	CAMERA CONNECTING CABLE	
	VFKW1000C	9PIN RS-232C CABLE	
	VFKW1000D	25PIN RS-232C CABLE	
	VHDW0125	LOCK SCREW	

12.3. ELECTRICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E10	LSEP8070E1	MAIN C.B.A. (A)	E.S.D. RTL
E10	LSEP8070F1	MAIN C.B.A. (B)	E.S.D. RTL
E20	LSEQ0598	ELECTRONIC VIEWFINDER C.B.A.	RTL
E40	LSEP8118A1	LIQUID CRYSTAL DISPLAY C.B.A.	RTL
E50	LSEP8075A1	RELAY C.B.A.	
E60	LSEQ0610	CCD C.B.A. NR	E.S.D.
E70	LSEP8050A1	PC JACK C.B.A.	RTL

12.3.1. MAIN C.B.A.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC301	MN673241	IC, LOGIC	E.S.D.
IC306	BR9040FV-DE2	IC, 4K EEP ROM	E.S.D.
IC309	BA10324AFVE1	IC, LINEAR	
IC503	ADM3202ARU	IC, RS232C DRIVER	E.S.D.
IC504	MN103004KSA	IC, 32BIT MICROCONTROLLER	E.S.D.
IC505	NJM2380AFTE1	IC, LINEAR	
IC602	MN5293-1	IC, CMOS GATE ARRAYS	E.S.D.
IC603	UPD16510GR8J	IC, CMOS STANDARD LOGIC	E.S.D.
IC605	AN2109NFHQ	IC, LINEAR	
IC606	TC7S04FTE85R	IC, CMOS STANDARD LOGIC	E.S.D.
IC701	LB1837MLTEL3	IC, LINEAR	
IC701	LB1837M-TE-L	IC, LINEAR	
IC701	LB1837MTEL3	IC, LINEAR	
IC702	LB1837MLTEL3	IC, LINEAR	
IC702	LB1837M-TE-L	IC, LINEAR	
IC702	LB1837MTEL3	IC, LINEAR	
IC1001	BA9737KV	IC, LINEAR	
IC2001	AN3897FH-V	IC, LINEAR	
IC2002	UN224-TX	IC, LINEAR	
IC2003	UN224-TX	IC, LINEAR	
IC3001	AN2401NFH	IC, LINEAR	
IC3002	MN38663S-E1	IC, LOGIC	E.S.D.
IC4001	BA7757BK	IC, LINEAR	
IC6001	MN101D02FWA1	IC, 8BIT MICROCONTROLLER	E.S.D.
IC6002	PST3439UR	IC, CMOS STANDARD LOGIC	E.S.D.
IC6002	R3111Q391ATR	IC, LINEAR	

Ref. No.	Part No.	Part Name & Description	Remarks
IC6002	S80839ANNPT2	IC, LINEAR	
IC6002	XC61CN3902NR	IC, LINEAR	
IC6005	S3510AEFJTB	IC, PERIPHERAL MCU	E.S.D.
IC6006	XC62FP4502PR	IC, PERIPHERAL MCU	E.S.D.
IC6006	RH5RE45AA-T1	IC, PERIPHERAL MCU	E.S.D.
IC6007	BA6417F-E2	IC, LINEAR	
IC6203	CNB10010RL	TAKEUP REEL SENSOR	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q301	2SD1819A	TRANSISTOR SI NPN CHIP	
Q301	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q302	2SC4215-0TL	TRANSISTOR SI NPN CHIP	
Q302	2SC4215-YTL	TRANSISTOR SI NPN CHIP	
Q303	2SD1819A	TRANSISTOR SI NPN CHIP	
Q303	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q305	2SD1819A	TRANSISTOR SI NPN CHIP	
Q305	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q306	2SB1218A	TRANSISTOR SI PNP CHIP	
Q306	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q307	2SB1218A	TRANSISTOR SI PNP CHIP	
Q307	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q308	2SD1328	TRANSISTOR SI NPN CHIP	
Q308	2SD2436	TRANSISTOR SI NPN CHIP	
Q310	2SD1819A	TRANSISTOR SI NPN CHIP	
Q310	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q311	2SD1819A	TRANSISTOR SI NPN CHIP	
Q311	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q617	UN5215	TRANSISTOR SI NPN CHIP	
Q617	DTC114TUA106	TRANSISTOR SI NPN CHIP	
Q703	UN5211	TRANSISTOR SI NPN CHIP	
Q703	DTC114EUA106	TRANSISTOR SI PNP CHIP	
Q1001	UN5111	TRANSISTOR SI PNP CHIP	
Q1001	DTA114EUA106	TRANSISTOR SI PNP CHIP	
Q1002	UN5113	TRANSISTOR SI PNP CHIP	
Q1002	DTA144EUA106	TRANSISTOR SI PNP CHIP	
Q1003	UN5115	TRANSISTOR SI PNP CHIP	
Q1003	DTA114TUA106	TRANSISTOR SI PNP CHIP	
Q1005	2SB1628-T1ZX	TRANSISTOR SI PNP CHIP	
Q1005	2SB1628-T1ZY	TRANSISTOR SI PNP CHIP	
Q1006	MPL1-TL	TRANSISTOR SI PNP CHIP	
Q1007	2SB1424T100Q	TRANSISTOR SI PNP CHIP	
Q1007	2SB1424T100P	TRANSISTOR SI PNP CHIP	
Q1008	MPL1-TL	TRANSISTOR SI PNP CHIP	
Q1009	MPL1-TL	TRANSISTOR SI PNP CHIP	
Q1010	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1010	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1011	XP4501	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q1011	HN1C01FU-GTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q1011	HN1C01FU-YTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q1011	UMX1NTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q1013	2SA204600L	TRANSISTOR SI PNP CHIP	
Q1013	CPH3115	TRANSISTOR SI PNP CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q1015	2SD2351T106V	TRANSISTOR SI NPN CHIP	
Q1015	2SD2351T106W	TRANSISTOR SI NPN CHIP	
Q1016	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1016	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1017	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1017	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1018	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1018	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1019	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1019	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1020	2SA201000L	TRANSISTOR SI PNP CHIP	
Q1020	CPH3106	TRANSISTOR SI PNP CHIP	
Q1021	UN5212	TRANSISTOR SI NPN CHIP	
Q1021	DTC124EUA106	TRANSISTOR SI NPN CHIP	
Q1024	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1024	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1101	2SA2011-TD	TRANSISTOR SI PNP CHIP	
Q1102	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1102	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1103	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1103	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1105	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1105	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q3003	2SB1218A	TRANSISTOR SI PNP CHIP	
Q3003	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q3004	2SC4215-0TL	TRANSISTOR SI NPN CHIP	
Q3004	2SC4215-YTL	TRANSISTOR SI NPN CHIP	
Q3005	2SD1819A	TRANSISTOR SI NPN CHIP	
Q3005	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q3027	2SD1819A	TRANSISTOR SI NPN CHIP	
Q3027	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q4002	XP4601	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q4002	HN1B04FU-GTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q4002	HN1B04FU-YTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q4002	UMZ1NTR	TRANSISTOR COMPLX CMP SI NPN CHIP	
Q4003	2SD1819A	TRANSISTOR SI NPN CHIP	
Q4003	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q4004	2SD1819A	TRANSISTOR SI NPN CHIP	
Q4004	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q4008	2SD602(R)	TRANSISTOR SI NPN CHIP	
Q4008	2SD2432(R)	TRANSISTOR SI NPN CHIP	
Q4008	2SD602A-RTX	TRANSISTOR SI NPN CHIP	
Q4009	2SD1819A	TRANSISTOR SI NPN CHIP	
Q4009	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q4010	2SB970	TRANSISTOR SI PNP CHIP	
Q4010	2SB1585	TRANSISTOR SI PNP CHIP	
Q4011	2SD1819A	TRANSISTOR SI NPN CHIP	
Q4011	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6004	2SB1218A	TRANSISTOR SI PNP CHIP	
Q6004	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q6006	2SB1218A	TRANSISTOR SI PNP CHIP (A)	
Q6006	2SA1576A106R	TRANSISTOR SI PNP CHIP (A)	
Q6008	UN5217	TRANSISTOR SI NPN CHIP	
Q6008	DTC124TUA106	TRANSISTOR SI NPN CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q6010	UN5212	TRANSISTOR SI NPN CHIP	
Q6010	DTC124EUA106	TRANSISTOR SI NPN CHIP	
Q6012	2SD2351T106V	TRANSISTOR SI NPN CHIP	
Q6012	2SD2351T106W	TRANSISTOR SI NPN CHIP	
Q6013	2SD601A	TRANSISTOR SI NPN CHIP	
Q6013	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6021	2SB1218A	TRANSISTOR SI PNP CHIP	
Q6021	2SA1576A106R	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D507	MA111	DIODE SI CHIP	
D507	1SS355TE-17	DIODE SI CHIP	
D1004	EP10QY03TE8L	DIODE SI CHIP	
D1005	MA111	DIODE SI CHIP	
D1005	1SS355TE-17	DIODE SI CHIP	
D1007	MA111	DIODE SI CHIP	
D1007	1SS355TE-17	DIODE SI CHIP	
D1008	MA111	DIODE SI CHIP	
D1008	1SS355TE-17	DIODE SI CHIP	
D1011	MA8110-L	DIODE ZENER CHIP 11V	
D1012	MA8068-HTX	DIODE ZENER CHIP 6.8V	
D1101	RD12S-T1B	DIODE ZENER CHIP 12V	
D1102	MA111	DIODE SI CHIP	
D1102	1SS355TE-17	DIODE SI CHIP	
D4002	MA3120WA	DIODE ZENER CHIP 12V	
D6001	MA142WK	DIODE SI CHIP	
D6001	DAN202UT106	DIODE SI CHIP	
D6019	MA111	DIODE SI CHIP	
D6019	1SS355TE-17	DIODE SI CHIP	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R301	ERJ3GEYJ122V	MGF CHIP 1/16W 1.2K	
R302	VRJSD3D5600V	MGF CHIP 1/16W 560	
R303	ERJ3GEYG102V	MGF CHIP 1/16W 1K	
R304	VRJSD3D2201	MGF CHIP 1/16W 2.2K	
R305	VRJSD3D2201	MGF CHIP 1/16W 2.2K	
R306	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R307	ERJ3GEYG103V	MGF CHIP 1/16W 10K	
R308	ERJ3GEYG391V	MGF CHIP 1/16W 390	
R309	VRJSD3D1001	MGF CHIP 1/16W 1K	
R310	VRJSD3D1001	MGF CHIP 1/16W 1K	
R312	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R314	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R315	VRJSD3D2200V	MGF CHIP 1/16W 220	
R316	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R317	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R318	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R319	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R320	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R321	VRJSD3D2401	MGF CHIP 1/16W 2.4K	
R322	VRJSD3D1501V	MGF CHIP 1/16W 1.5K	
R323	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R333	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R336	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R340	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R342	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R343	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R344	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R345	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R346	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R347	ERJ3GEYJ123X	MGF CHIP 1/16W 12K	
R348	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R349	ERJ3GEYJ563V	MGF CHIP 1/16W 56K	
R350	ERJ3GEYJ822V	MGF CHIP 1/16W 8.2K	
R351	ERJ3GEYJ154V	MGF CHIP 1/16W 150K	
R352	ERJ3GEYJ823V	MGF CHIP 1/16W 82K	
R353	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R355	ERJ3GEYJ334V	MGF CHIP 1/16W 330K	
R356	ERJ3GEYJ394V	MGF CHIP 1/16W 390K	
R357	ERJ3GEYJ474V	MGF CHIP 1/16W 470K	
R358	ERJ3GEYJ123X	MGF CHIP 1/16W 12K	
R359	ERJ3GEYJ123X	MGF CHIP 1/16W 12K	
R360	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R361	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R362	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R363	ERJ3GEYJ123X	MGF CHIP 1/16W 12K	
R364	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R365	ERJ3GEYK225V	MGF CHIP 1/16W 2.2M	
R366	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R367	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R368	ERJ3GEYJ273V	MGF CHIP 1/16W 27K	
R369	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R370	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R372	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R373	ERJ3GEYJ303V	MGF CHIP 1/16W 30K	

Ref. No.	Part No.	Part Name & Description	Remarks
R374	ERJ3GEYJ822V	MGF CHIP 1/16W 8.2K	
R375	ERJ3GEYJ333X	MGF CHIP 1/16W 33K	
R376	ERJ3GEYJ822V	MGF CHIP 1/16W 8.2K	
R377	ERJ3GEYJ333X	MGF CHIP 1/16W 33K	
R378	ERJ3GEYJ333X	MGF CHIP 1/16W 33K	
R379	ERJ3GEYJ822V	MGF CHIP 1/16W 8.2K	
R380	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R381	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R382	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R383	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R384	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R385	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R386	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R387	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R388	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R389	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R390	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R391	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R393	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R394	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R395	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R402	VRJSD3D1802	MGF CHIP 1/16W 18K	
R427	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R430	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R431	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R436	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R450	ERJ3GEYJ391V	MGF CHIP 1/16W 390	
R451	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R452	VRJSD3D2701	MGF CHIP 1/16W 2.7K	
R453	VRJSD3D1003	MGF CHIP 1/16W 100K	
R505	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R506	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R507	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R508	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R509	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R510	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R512	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R513	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R516	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R517	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R522	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R523	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R524	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R525	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R526	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R527	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R528	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R529	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R530	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R531	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R532	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R533	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R534	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R535	ERJ3GEYJ101X	MGF CHIP 1/16W 100	

Ref. No.	Part No.	Part Name & Description	Remarks
R536	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R537	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R538	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R539	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R540	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R541	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R542	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R543	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R544	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R545	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R546	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R548	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R549	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R550	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R551	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R552	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R553	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R554	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R555	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R556	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R557	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R558	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R559	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R560	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R561	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R562	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R566	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R567	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R568	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R569	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R570	LSRJ0002	VARIABLE CHIP	
R571	LSRJ0002	VARIABLE CHIP	
R603	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R605	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R608	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R609	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R613	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R616	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R617	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R618	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R619	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R620	ERJ3GEYJ182V	MGF CHIP 1/16W 1.8K	
R622	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R623	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R625	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R626	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R639	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R641	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R643	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R644	ERJ3GEYJ330V	MGF CHIP 1/16W 33	
R645	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R646	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R651	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R652	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	

Ref. No.	Part No.	Part Name & Description	Remarks
R653	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R654	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R659	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R662	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R680	ERJ3GEYJ331X	MGF CHIP 1/16W 330	
R683	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R685	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R687	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R689	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R691	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R692	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R694	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R705	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R706	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R707	ERJ8GEYJ101V	MGF CHIP 1/4W 100	
R708	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R709	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R712	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R713	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R714	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R715	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R718	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R719	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R720	ERJ3GEYJ114V	MGF CHIP 1/16W 110K	
R721	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R722	ERJ3GEYJ114V	MGF CHIP 1/16W 110K	
R723	ERJ3GEYJ363V	MGF CHIP 1/16W 36K	
R724	ERJ3GEYJ363V	MGF CHIP 1/16W 36K	
R726	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R730	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R732	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R735	ERJ3GEYJ363V	MGF CHIP 1/16W 36K	
R736	ERJ3GEYJ363V	MGF CHIP 1/16W 36K	
R737	ERJ3GEYJ114V	MGF CHIP 1/16W 110K	
R738	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R739	ERJ3GEYJ114V	MGF CHIP 1/16W 110K	
R740	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R744	ERJ8GEYJ3R9V	MGF CHIP 1/8W 3.9	
R745	ERJ8GEYJ3R9V	MGF CHIP 1/8W 3.9	
R746	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R747	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R748	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R749	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R750	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R751	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R754	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R755	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R1003	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R1004	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R1006	ERJ3GEYJ224V	MGF CHIP 1/16W 220K	
R1007	ERJ3GEYJ224V	MGF CHIP 1/16W 220K	
R1009	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1011	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R1012	VRJSD3D3902	MGF CHIP 1/16W 39K	

Ref. No.	Part No.	Part Name & Description	Remarks
R1013	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R1016	ERJ3GEYJ273V	MGF CHIP 1/16W 27K	
R1017	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1019	ERJ3GEYJ224V	MGF CHIP 1/16W 220K	
R1020	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R1021	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R1022	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R1023	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1026	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R1027	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R1028	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R1029	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R1030	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R1031	VRJSD3D2002V	MGF CHIP 1/16W 20K	
R1032	VRJSD3D1500V	MGF CHIP 1/16W 150	
R1033	VRJSD3D1002	MGF CHIP 1/16W 10K	
R1034	VRJSD3D3601V	MGF CHIP 1/16W 3600	
R1035	VRJSD3D39R0V	MGF CHIP 1/16W 39	
R1036	VRJSD3D2701	MGF CHIP 1/16W 2.7K	
R1037	VRJSD3D2702	MGF CHIP 1/16W 27K	
R1038	VRJSD3D39R0V	MGF CHIP 1/16W 39	
R1039	VRJSD3D3001	MGF CHIP 1/16W 3K	
R1040	VRJSD3D6201V	MGF CHIP 1/16W 6.2K	
R1041	VRJSD3D39R0V	MGF CHIP 1/16W 39	
R1043	VRJSD3D3001	MGF CHIP 1/16W 3K	
R1044	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R1045	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R1046	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R1047	ERJ3GEYJ330V	MGF CHIP 1/16W 33	
R1056	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1058	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R1059	ERJ3GEYJ681X	MGF CHIP 1/16W 680	
R1060	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R1062	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1064	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R1065	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R1067	VRJSD3D3901	MGF CHIP 1/16W 3.9K	
R1068	VRJSD3D1801	MGF CHIP 1/16W 1.8K	
R1069	VRJSD3D33R0	MGF CHIP 1/16W 33	
R1071	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1072	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1073	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1074	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1081	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R1082	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R1083	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R1084	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R1085	ERJ3GEYJ392X	MGF CHIP 1/16W 3.9K	
R1086	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1087	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1101	ERJ8GEYJR56V	MGF CHIP 1/8W 0.56	
R1102	ERJ8GEYJR56V	MGF CHIP 1/8W 0.56	
R1103	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1104	ERJ3GEYJ560V	MGF CHIP 1/16W 56	

Ref. No.	Part No.	Part Name & Description	Remarks
R1105	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R1106	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R1107	ERJ3GEYJ562X	MGF CHIP 1/16W 5.6K	
R1108	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1109	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R1110	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1111	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R1601	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R1602	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R1603	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R2001	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R2003	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R2004	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R2008	ERJ8GEYJR33V	MGF CHIP 1/8W 0.33	
R2010	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R2011	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R2012	ERJ3GEYJ184V	MGF CHIP 1/16W 180K	
R2013	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R2014	ERJ3GEYJ684V	MGF CHIP 1/16W 680K	
R2015	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R2016	ERJ3GEYJ684V	MGF CHIP 1/16W 680K	
R2021	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R2022	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R2023	ERJ8GEYJR33V	MGF CHIP 1/8W 0.33	
R2025	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R2026	ERJ3GEYJ820V	MGF CHIP 1/16W 82	
R2027	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R2028	ERJ3GEYJ391V	MGF CHIP 1/16W 390	
R2029	ERJ3GEYJ391V	MGF CHIP 1/16W 390	
R2030	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R2031	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R2032	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R3002	ERJ3GEYJ154V	MGF CHIP 1/16W 150K	
R3003	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R3004	ERJ3GEYJ270V	MGF CHIP 1/16W 27	
R3005	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R3006	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R3008	ERJ3GEYJ122V	MGF CHIP 1/16W 1.2K	
R3009	ERJ3GEYJ392X	MGF CHIP 1/16W 3.9K	
R3010	ERJ3GEYJ122V	MGF CHIP 1/16W 1.2K	
R3011	ERJ3GEYJ271V	MGF CHIP 1/16W 270	
R3015	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R3016	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R3017	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R3018	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R3022	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R3023	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R3024	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3025	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R3026	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R3031	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R3032	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R3033	ERJ3GEYJ182V	MGF CHIP 1/16W 1.8K	
R3034	ERJ3GEYJ821X	MGF CHIP 1/16W 820	

Ref. No.	Part No.	Part Name & Description	Remarks
R3035	ERJ3GEYJ182V	MGF CHIP 1/16W 1.8K	
R3036	ERJ3GEYJ471X	MGF CHIP 1/16W 470	
R3037	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R3038	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R3039	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R3040	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R3041	ERJ3GEYJ681X	MGF CHIP 1/16W 680	
R3044	ERJ3GEYJ681X	MGF CHIP 1/16W 680	
R3045	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R3048	ERJ3GEYJ681X	MGF CHIP 1/16W 680	
R3050	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R3129	ERJ3GEYJ391V	MGF CHIP 1/16W 390	
R3130	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R3140	ERJ3GEYJ122V	MGF CHIP 1/16W 1.2K	
R3150	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R3151	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R3152	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R3153	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R3154	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R3173	ERJ3GEY0R00X	MGF CHIP 1/16W 0 (B)	
R3174	ERJ3GEY0R00X	MGF CHIP 1/16W 0 (A)	
R3180	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R3181	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R3182	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R3183	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R3184	ERJ3GEYJ821X	MGF CHIP 1/16W 820	
R3185	ERJ3GEYJ182V	MGF CHIP 1/16W 1.8K	
R3186	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R3190	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R3213	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R3214	ERJ3GEY0R00X	MGF CHIP 1/16W 0	
R4001	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R4002	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R4004	ERJ3GEYJ123X	MGF CHIP 1/16W 12K	
R4005	ERJ3GEYJ333X	MGF CHIP 1/16W 33K	
R4006	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R4007	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R4008	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R4009	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R4010	ERJ3GEYJ221V	MGF CHIP 1/16W 220	
R4011	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R4012	ERJ3GEYJ163V	MGF CHIP 1/16W 16K	
R4013	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R4014	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R4015	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R4016	ERJ3GEYJ183X	MGF CHIP 1/16W 18K	
R4017	ERJ3GEYJ100V	MGF CHIP 1/16W 10	
R4018	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R4019	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R4020	ERJ3GEYJ334V	MGF CHIP 1/16W 330K	
R4021	ERJ3GEYJ122V	MGF CHIP 1/16W 1.2K	
R4022	ERJ3GEYJ220V	MGF CHIP 1/16W 22	
R4024	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R4027	ERJ3GEYJ153V	MGF CHIP 1/16W 15K	

Ref. No.	Part No.	Part Name & Description	Remarks
R4029	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R4030	ERJ3GEYJ680V	MGF CHIP 1/16W 68	
R4031	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R4032	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R4033	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R4034	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R4035	ERJ3GEYJ101X	MGF CHIP 1/16W 100	
R4046	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R4061	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R4062	ERJ3GEYJ333X	MGF CHIP 1/16W 33K	
R6004	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R6006	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R6007	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6008	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R6009	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6010	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6011	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6012	ERJ3GEYJ103X	MGF CHIP 1/16W 10K (A)	
R6013	ERJ3GEYJ103X	MGF CHIP 1/16W 10K (A)	
R6014	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6015	ERJ3GEYJ273V	MGF CHIP 1/16W 27K	
R6016	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6017	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6018	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6019	ERJ3GEYJ474V	MGF CHIP 1/16W 470K	
R6020	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6021	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6022	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R6024	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R6025	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6026	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6027	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R6028	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R6029	ERJ3GEYJ332X	MGF CHIP 1/16W 3.3K	
R6030	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R6034	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R6035	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6036	ERJ3GEYJ563V	MGF CHIP 1/16W 56K	
R6037	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6038	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6039	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R6040	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6041	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6042	ERJ3GEYJ124V	MGF CHIP 1/16W 120K	
R6046	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6047	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6048	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6049	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6050	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6051	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6052	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6054	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R6056	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6057	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6058	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6059	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6060	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6062	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6064	ERJ3GEYJ563V	MGF CHIP 1/16W 56K	
R6066	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R6068	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6070	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6072	ERJ3GEYJ392X	MGF CHIP 1/16W 3.9K	
R6073	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R6074	ERJ3GEYJ223X	MGF CHIP 1/16W 22K	
R6075	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6077	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6079	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6080	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6081	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6082	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6083	ERJ3GEYJ681X	MGF CHIP 1/16W 680	
R6084	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6085	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6086	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6087	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6088	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6089	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6090	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6091	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6092	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6093	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6094	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6095	ERJ3GEYJ563V	MGF CHIP 1/16W 56K	
R6096	ERJ3GEYJ104X	MGF CHIP 1/16W 100K	
R6097	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6098	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6099	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6100	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K (A)	
R6101	ERJ3GEYJ104X	MGF CHIP 1/16W 100K (B)	
R6102	VRJSD3D1802	MGF CHIP 1/16W 18K	
R6103	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R6104	VRJSD3D1002	MGF CHIP 1/16W 10K	
R6108	ERJ3GEYJ224V	MGF CHIP 1/16W 220K	
R6110	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6111	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6112	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6113	ERJ3GEYJ272X	MGF CHIP 1/16W 2.7K	
R6114	ERJ3GEYJ154V	MGF CHIP 1/16W 150K	
R6115	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R6116	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R6119	ERJ8GEYJ101V	MGF CHIP 1/4W 100	
R6120	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6129	ERJ3GEYJ473X	MGF CHIP 1/16W 47K	
R6143	ERJ3GEYJ271V	MGF CHIP 1/16W 270	
R6144	ERJ3GEYJ271V	MGF CHIP 1/16W 270	
R6145	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6146	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6147	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R6148	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6149	ERJ3GEYJ472X	MGF CHIP 1/16W 4.7K	
R6162	ERJ3GEYJ102X	MGF CHIP 1/16W 1K	
R6191	ERJ3GEYJ222X	MGF CHIP 1/16W 2.2K	
R6201	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R6202	ERJ3GEYJ103X	MGF CHIP 1/16W 10K	
R6209	ERJ3GEYJ225V	MGF CHIP 1/16W 2.2M	
R6210	ERJ3GEYJ561X	MGF CHIP 1/16W 560	
R6215	ERJ3GEYJ132V	MGF CHIP 1/16W 1.3K	
R6217	ERJ3GEYJ392V	MGF CHIP 1/16W 3.9K	
R6226	ERJ3GEY0R00X	MGF CHIP 1/16W 0	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C301	ECUV1H330JCV	C CHIP 50V 33PF	
C302	ECUV1H560JCV	C CHIP 50V 56PF	
C305	ECUV1H470JCV	C CHIP 50V 47PF	
C306	VCUSQAC105KB	C CHIP 16V 1UF	
C307	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C309	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C310	ECUV1A105KBN	C CHIP 10V 1UF	
C311	ECUV1A105KBN	C CHIP 10V 1UF	
C312	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C314	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C316	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C317	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C318	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C319	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C320	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C321	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C323	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C326	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C327	ECUE1H103ZFB	C CHIP 50V 0.01UF	
C329	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C330	ECEV0JA220S	ELECTROLYTIC CHIP 6.3V 22UF	
C337	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C338	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C339	ECUV1C105ZFN	C CHIP 16V 1UF	
C340	ECUE1H103KBV	C CHIP 50V 0.01UF	
C341	ECUV1H102KBV	C CHIP 50V 1000PF	
C342	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C345	ECUV1H471KBV	C CHIP 50V 470PF	
C346	ECUV1H471KBV	C CHIP 50V 470PF	
C357	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C401	ECUE1H103KBV	C CHIP 50V 0.01UF	
C402	ECUE1H103KBV	C CHIP 50V 0.01UF	
C403	ECUE1H103KBV	C CHIP 50V 0.01UF	
C450	ECUE1H103KBV	C CHIP 50V 0.01UF	
C451	ECUV1A105KBN	C CHIP 10V 1UF	
C501	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C502	ECUE1C104ZFB	C CHIP 16V 0.1UF	
C503	ECUE1C104ZFB	C CHIP 16V 0.1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C504	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C505	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C506	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C507	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C508	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C509	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C510	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C511	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C512	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C513	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C514	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C515	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C519	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C521	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C522	ECUV1C104KBV	C CHIP 16V 0.1UF	
C523	ECUV1C104KBV	C CHIP 16V 0.1UF	
C524	ECUV1C104KBV	C CHIP 16V 0.1UF	
C525	ECUV1C104KBV	C CHIP 16V 0.1UF	
C526	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C527	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C528	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C529	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C530	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C531	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C534	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C535	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C604	ECUV1H150JCV	C CHIP 50V 15PF	
C605	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C606	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C607	ECUV1H150JCV	C CHIP 50V 15PF	
C610	ECRJA010A11B	CAPACITOR TRIMMER CHIP 10PF	
C611	ECUV1H150JCV	C CHIP 50V 15PF	
C613	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C614	VCUSQBC105KB	C CHIP 16V 1UF	
C615	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C616	ECUV1C104KBV	C CHIP 16V 0.1UF	
C617	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C623	ECEV1CA100S	ELECTROLYTIC CHIP 16V 10UF	
C633	VCUSQAC105KB	C CHIP 16V 1UF	
C634	VCUSQAC105KB	C CHIP 16V 1UF	
C636	ECUV1C105ZFN	C CHIP 16V 1UF	
C638	ECUV1C105ZFN	C CHIP 16V 1UF	
C639	ECUV1C105ZFN	C CHIP 16V 1UF	
C640	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C641	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C642	ECUV1A105KBN	C CHIP 10V 1UF	
C643	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C644	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C645	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C646	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C647	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C651	ECUV1H102KBV	C CHIP 50V 1000PF	
C663	ECUV1H100DCV	C CHIP 50V 10PF	
C703	ECUE1C104ZFV	C CHIP 16V 0.1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C704	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C706	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C707	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C708	ECEV1CA470S	ELECTROLYTIC CHIP 16V 47UF	
C709	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C710	ECUV1H101JCV	C CHIP 50V 100PF	
C1002	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1003	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1005	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C1007	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C1008	ECUV1H101JCV	C CHIP 50V 100PF	
C1009	VCUSJEJ105KB	C CHIP 6.3V 1UF	
C1010	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1011	ECUV1H472KBV	C CHIP 50V 4700PF	
C1012	ECUV1H472KBV	C CHIP 50V 4700PF	
C1013	ECUV1H101JCV	C CHIP 50V 100PF	
C1014	ECUV1H470JCV	C CHIP 50V 47PF	
C1015	ECUV1H101JCV	C CHIP 50V 100PF	
C1016	ECUV1H101JCV	C CHIP 50V 100PF	
C1017	ECUV1H470JCV	C CHIP 50V 47PF	
C1018	ECUV1H472KBV	C CHIP 50V 4700PF	
C1019	ECUV1H472KBV	C CHIP 50V 4700PF	
C1020	VCUSQBC105KB	C CHIP 16V 1UF	
C1021	ECEV1CA470S	ELECTROLYTIC CHIP 16V 47UF	
C1022	VCUSQAC475KB	C CHIP 16V 4.7UF	
C1023	VCUSJB335KB	C CHIP 6.3V 3.3UF	
C1024	ECST1AY475N	TANTALUM CHIP 10V 4.7UF	
C1025	ECUV1H471KBV	C CHIP 50V 470PF	
C1026	ECUV0J225KBN	C CHIP 6.3V 2.2UF	
C1027	ECEV0GA470S	ELECTROLYTIC CHIP 4V 47UF	
C1028	ECUV1H102KBV	C CHIP 50V 1000PF	
C1029	VCUSQBC105KB	C CHIP 16V 1UF	
C1030	ECUV1C105ZFN	C CHIP 16V 1UF	
C1031	ECEV1CA100S	ELECTROLYTIC CHIP 16V 10UF	
C1032	VCUSQBC105KB	C CHIP 16V 1UF	
C1033	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1034	VCUSQBH105ZF	C CHIP 50V 1UF	
C1035	VCUSQBH105ZF	C CHIP 50V 1UF	
C1036	ECUV1H102KBV	C CHIP 50V 1000PF	
C1037	ECUV0J225KBN	C CHIP 6.3V 2.2UF	
C1038	ECEV0JA220S	ELECTROLYTIC CHIP 6.3V 22UF	
C1039	ECUV1H102KBV	C CHIP 50V 1000PF	
C1040	ECUV1C105ZFN	C CHIP 16V 1UF	
C1041	ECEV1CA100S	ELECTROLYTIC CHIP 16V 10UF	
C1042	ECEV0JA470S	ELECTROLYTIC CHIP 6.3V 47UF	
C1044	ECST0JY226R	TANTALUM CHIP 6.3V 22UF	
C1045	ECUV1A105ZFV	C CHIP 10V 1UF	
C1046	ECUV1A105KBN	C CHIP 10V 1UF	
C1047	ECEV1CA100S	ELECTROLYTIC CHIP 16V 10UF	
C1049	ECUV1H102KBV	C CHIP 50V 1000PF	
C1051	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C1053	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1054	ECUV1A105ZFV	C CHIP 10V 1UF	
C1055	ECUV1A105KBN	C CHIP 10V 1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C1059	ECUV1A105KBN	C CHIP 10V 1UF	
C1060	ECUV1A105ZV	C CHIP 10V 1UF	
C1061	ECUV1H470JCV	C CHIP 50V 47PF	
C1062	ECUV1H470JCV	C CHIP 50V 47PF	
C1063	ECUV1H101JCV	C CHIP 50V 100PF	
C1064	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1065	ECUE1H103KBV	C CHIP 50V 0.01UF	
C1101	ECUV0J225KBN	C CHIP 6.3V 2.2UF	
C2001	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2002	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2003	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2007	ECEV0JA220S	ELECTROLYTIC CHIP 6.3V 22UF	
C2008	ECUV1E333KBN	C CHIP 25V 0.033UF	
C2010	ECUV1C683KBV	C CHIP 16V 0.068UF	
C2011	ECUV1C334KBN	C CHIP 16V 0.33UF	
C2012	ECUV1C473KBV	C CHIP 16V 0.047UF	
C2013	ECUV1C473KBV	C CHIP 16V 0.047UF	
C2015	ECUV1H152KBV	C CHIP 50V 1500PF	
C2016	ECUV1H331KBV	C CHIP 50V 330PF	
C2017	ECUV1A105KBN	C CHIP 10V 1UF	
C2021	ECUV1E473ZV	C CHIP 25V 0.047UF	
C2022	ECUV1E473ZFN	C CHIP 25V 0.047UF	
C2023	ECUV1C104KBV	C CHIP 16V 0.1UF	
C2024	ECUV1A105KBN	C CHIP 10V 1UF	
C2025	ECUE1H103KBV	C CHIP 50V 0.01UF	
C2030	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2031	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2032	ECUV1C104ZV	C CHIP 16V 0.1UF	
C2040	ECEV1CA100S	ELECTROLYTIC CHIP 16V 10UF	
C3001	VCUSQAA335KB	C CHIP 10V 3.3UF	
C3002	ECUE1H103ZV	C CHIP 50V 0.01UF	
C3003	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C3005	ECUV1H220JCV	C CHIP 50V 22PF	
C3006	ECUV1H332KBV	C CHIP 50V 3300PF	
C3007	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C3008	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3009	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C3010	ECUE1H103ZV	C CHIP 50V 0.01UF	
C3011	ECUV1H221JCV	C CHIP 50V 220PF	
C3012	ECUV1H821KBV	C CHIP 50V 820PF	
C3013	ECUV1H560JCV	C CHIP 50V 56PF	
C3014	ECUV1H331JCV	C CHIP 50V 330PF	
C3015	ECUV1H561JCV	C CHIP 50V 560PF	
C3017	ECUE1H103ZV	C CHIP 50V 0.01UF	
C3018	ECUV1C104KBV	C CHIP 16V 0.1UF	
C3019	ECUE1H103ZV	C CHIP 50V 0.01UF	
C3021	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C3023	ECUV1C473KBV	C CHIP 16V 0.047UF	
C3024	ECUV1C105ZFN	C CHIP 16V 1UF	
C3025	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3028	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3029	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3030	ECUE1H103ZV	C CHIP 50V 0.01UF	
C3031	ECUV1A224KBV	C CHIP 10V 0.22UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3032	ECUV1H332KBV	C CHIP 50V 3300PF	
C3033	ECST1CY225	TANTALUM CHIP 16V 2.2UF	
C3034	ECUV1C105ZFN	C CHIP 16V 1UF	
C3036	ECST1AY475N	TANTALUM CHIP 10V 4.7UF	
C3038	ECUV1H560JCV	C CHIP 50V 56PF	
C3039	ECUV1H180JCV	C CHIP 50V 18PF	
C3040	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3042	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C3043	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C3045	ECST0JY335	TANTALUM CHIP 6.3V 3.3UF	
C3046	ECEV0GA221S	ELECTROLYTIC CHIP 4V 220UF	
C3047	ECUV1A105KBN	C CHIP 10V 1UF	
C3048	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3053	ECUV1H390JCV	C CHIP 50V 39PF	
C3054	ECUV1H101JCV	C CHIP 50V 100PF	
C3055	ECUV1H181JCV	C CHIP 50V 180PF	
C3057	ECUV1H180JCV	C CHIP 50V 18PF	
C3058	ECUV1H120JCV	C CHIP 50V 12PF	
C3059	ECUV1H100DCV	C CHIP 50V 10PF	
C3060	ECUV1H120JCV	C CHIP 50V 12PF	
C3061	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3068	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3070	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C3072	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3073	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C3074	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C3075	ECUE1H103KBV	C CHIP 50V 0.01UF	
C3077	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3078	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3079	ECUV1H102KBV	C CHIP 50V 1000PF	
C3080	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3081	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3085	ECUV1C104ZFV	C CHIP 16V 0.1UF	
C3098	ECUV1C104ZFV	C CHIP 16V 0.1UF	
C3107	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3132	ECUV1C105ZFN	C CHIP 16V 1UF	
C3135	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3139	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3150	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C3152	ECUV1H681KBV	C CHIP 50V 680PF	
C3153	ECUV1H681KBV	C CHIP 50V 680PF	
C4002	ECEV0JA220S	ELECTROLYTIC CHIP 6.3V 22UF	
C4004	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C4005	ECEV0JA220S	ELECTROLYTIC CHIP 6.3V 22UF	
C4006	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C4007	ECUV1C105ZFN	C CHIP 16V 1UF	
C4008	ECUV1E273KBN	C CHIP 25V 0.027UF	
C4009	ECUV1H822KBV	C CHIP 50V 8200PF	
C4010	ECUV1H221KBV	C CHIP 50V 220PF	
C4011	ECUV1A105KBN	C CHIP 10V 1UF	
C4012	ECUV1H152KBV	C CHIP 50V 1500PF	
C4013	ECUV1H222KBV	C CHIP 50V 2200PF	
C4015	ECUV1A105KBN	C CHIP 10V 1UF	
C4016	ECEV1HA3R3S	ELECTROLYTIC CHIP 50V 3.3UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C4017	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C4018	ECUV1H103KBV	C CHIP 50V 0.01UF	
C4019	ECST1AY475N	TANTALUM CHIP 10V 4.7UF	
C4020	ECUV1H470JCV	C CHIP 50V 47PF	
C4021	ECUV1H102KBV	C CHIP 50V 1000PF	
C4022	ECUT2A472JCW	C CHIP 100V 4700PF	
C4023	ECUV1H682KBN	C CHIP 50V 6800PF	
C4024	ECUV1E223KBV	C CHIP 25V 0.022UF	
C4025	ECUV1A105KBN	C CHIP 10V 1UF	
C4026	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C4027	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C4041	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C6001	ECUV1H330JCV	C CHIP 50V 33PF	
C6002	ECUV1A224KBV	C CHIP 10V 0.22UF	
C6004	ECUV1C105ZFN	C CHIP 16V 1UF	
C6006	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C6007	ECUV1H120JCV	C CHIP 50V 12PF	
C6008	ECUV1H100DCV	C CHIP 50V 10PF	
C6009	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C6011	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C6013	ECUV1C104ZFV	C CHIP 16V 0.1UF	
C6014	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C6017	ECUV1C104KBV	C CHIP 16V 0.1UF	
C6018	ECUV1A105KBN	C CHIP 10V 1UF	
C6020	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C6022	ECUE1H103ZFV	C CHIP 50V 0.01UF	
C6023	ECUV1H102KBV	C CHIP 50V 1000PF	
C6025	ECEV0JA470S	ELECTROLYTIC CHIP 6.3V 47UF	
C6028	ECUV1H0R5CCV	C CHIP 50V 0.5PF	
C6029	ECUV1C105ZFN	C CHIP 16V 1UF	
C6031	ECUE1H103KBV	C CHIP 50V 0.01UF	
C6044	ECUE1C104ZFV	C CHIP 16V 0.1UF	
C6201	ECUV1C104KBV	C CHIP 16V 0.1UF	
C6202	ECUV1C104KBV	C CHIP 16V 0.1UF	
C6207	ECUE1H121JCV	C CHIP 50V 120PF	
C6208	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C6214	ECUV1H102KBV	C CHIP 50V 1000PF	
C6220	ECUV1C155ZFN	C CHIP 16V 1.5UF	
C6221	ECUV1H392KBV	C CHIP 50V 3900PF	
C6222	VCUSQAC105KB	C CHIP 16V 1UF	
C6223	ECST0JX226	TANTALUM CHIP 6.3V 22UH	
C6225	ECUV1H102KBV	C CHIP 50V 1000PF	

FILTERS

Ref. No.	Part No.	Part Name & Description	Remarks
FL3001	VLFW0041		

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L302	VLQ0426J470	COIL CHIP 47UH	
L303	VLQ0426J330	COIL CHIP 33UH	
L304	VLQ0426J150	COIL CHIP 15UH	
L305	VLQ0426J3R9	COIL CHIP 3.9UH	
L307	ELJFA101KF2	COIL CHIP 100UH	
L308	VLQ0319K100	COIL CHIP 10UH	
L310	VLQ0319M4R7	COIL CHIP 4.7UH	
L503	BK1608HM102	FERRITE CORE	
L504	BK1608HM102	FERRITE CORE	
L505	BK1608HM102	FERRITE CORE	
L506	VLQ0163K150	COIL CHIP 15UH	
L601	VLQ0163K470	COIL CHIP 47UH	
L602	VLQ0426J150	COIL CHIP 15UH	
L605	VLQ0163K150	COIL CHIP 15UH	
L1001	NP05DA100M	COIL CHIP 10UH	
L1002	NP05DA100M	COIL CHIP 10UH	
L1003	LSLQL06S330M	CHOKE COIL 33UH	
L1004	NP05DA330M	COIL CHIP 33UH	
L1005	LSLQJ05S100M	CHOKE COIL 10UH	
L1006	VLQ0319K100	COIL CHIP 10UH	
L1007	VLJW3TC100KT	COIL CHIP 10UH	
L1008	LSLJCMA4R7MF	COIL CHIP 4.7UH	
L1009	VLQ0426J470	COIL CHIP 47UH	
L1010	VLQ0426J470	COIL CHIP 47UH	
L1011	VLQ0426J470	COIL CHIP 47UH	
L1012	VLJW3TC100KT	COIL CHIP 10UH	
L1014	LSLJCMA4R7MF	COIL CHIP 4.7UH	
L1015	LSLJDJA100KF	COIL CHIP 10UF	
L1016	LSLJDJA100KF	COIL CHIP 10UF	
L1017	LSLQL06S330M	CHOKE COIL 33UH	
L3001	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L3002	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L3003	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L3004	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L3006	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L3009	VLQ0426J820	COIL CHIP 82UH	
L3011	VLQ0426J470	COIL CHIP 47UH	
L3012	VLQ0426J120	COIL CHIP 12UH	
L3013	VLQ0163J331	COIL CHIP 330UH	
L3014	VLQ0426J180	COIL CHIP 18UH	
L3015	VLQ0163J331	COIL CHIP 330UH	
L3016	VLQ0426J470	COIL CHIP 47UH	
L3017	VLQ0163J331	COIL CHIP 330UH	
L3030	LSLJDJA220KF	BEAD INDUCTOR 22UH	
L4001	VLQ0319K221	COIL CHIP 220UH	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X601	VSWX0096	CRYSTAL OSCILLATOR	
X3001	VSWX0087	CRYSTAL OSCILLATOR	
X6001	VSWX0093	CRYSTAL OSCILLATOR	
X6002	LSSX0030	CRYSTAL OSCILLATOR	





PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P3	VJPW0254	CONNECTOR 5P	
P38	VJPW0264	CONNECTOR 3P	

FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP1	LSJSRF28DGA	CONNECTOR 28P	
FP2	LSJS09AA020	CONNECTOR 20P	
FP3	LSJSQG26DG	CONNECTOR 26P	
FP6	LSJS02AC039C	CONNECTOR 39P	
FP7	VJPW501MP14	CONNECTOR 14P	
FP8	LSJS09AA012	CONNECTOR 12P	
FP9	LSJS09AA020	CONNECTOR 20P	
FP10	LSJS05AA022	CONNECTOR 22P	
FP11	LSJSQG11DG	CONNECTOR 11P	
FP13	LSJS09AA042	CONNECTOR 42P	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F1001	LSSF008C25T	FUSE CHIP 32V 2.5A	
F1001	LSSF015D25T	FUSE 24V 2.5A	
F1002	LSSF008F15T	FUSE CHIP 63V 1.5A	
F1002	LSSF015D15T	FUSE 24V 1.5A	
PR1001	LSSF003C06T	FUSE 32V	

TRANSFORMER


Ref. No.	Part No.	Part Name & Description	Remarks
T1001	LSTP0106	TRANSFORMER	
T4001	EQQ6QT001T	TRANSFORMER	

12.3.2. ELECTRONIC VIEWFINDER C.B.A.

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC901	AN2515NS	IC, LINEAR	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q901	2SD968A(S)	TRANSISTOR SI NPN CHIP	
Q902	2SB1218A	TRANSISTOR SI PNP CHIP	
Q902	2SA1576A106R	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D901	SFPL-52V	DIODE SI CHIP	


RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R901	ERJ3GEYJ4R7V	MGF CHIP 1/16W 4.7	
R902	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R903	VRJSD3D1302V	MGF CHIP 1/16W 13K	
R904	VRJSD3D1203V	MGF CHIP 1/16W 120K	
R905	ERJ3GEYJ514V	MGF CHIP 1/16W 510K	
R906	ERJ3GEYJ242V	MGF CHIP 1/16W 2.4K	
R907	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R908	VRJSD3D3302	MGF CHIP 1/16W 33K	
R911	ERJ3GEYJ3R9V	MGF CHIP 1/16W 3.9	
R912	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
R913	ERJ3GEYJ471V	MGF CHIP 1/16W 470	
R914	ERJ3GEYJ272V	MGF CHIP 1/16W 2.7K	
R915	ERJ3GEYJ153V	MGF CHIP 1/16W 15K	
R916	ERJ3GEYJ152V	MGF CHIP 1/16W 1.5K	
R917	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
R918	ERJ3GEYJ105V	MGF CHIP 1/16W 1M	
R919	ERJ3GEYJ100V	MGF CHIP 1/16W 10	
R920	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R921	ERJ6GEYJ106V	MGF CHIP 1/10W 10M	
R922	ERJ6GEYJ106V	MGF CHIP 1/10W 10M	
R923	ERJ6GEYJ185V	MGF CHIP 1/10W 1.8M	
R925	ERJ6GEYJ684V	MGF CHIP 1/10W 680K	
R926	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R927	ERJ6GEYJ185V	MGF CHIP 1/10W 1.8M	
R929	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
VR901	EVM7JSX30BE2	VARIABLE CHIP 220	
VR902	VRVW0028	VARIABLE CHIP 5M	
VR903	EVM7ESX30B26	VARIABLE CHIP 2M	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C902	ECUV1H123KBV	C CHIP 50V 0.012UF	
C903	VCUSQBA105KB	C CHIP 10V 1UF	
C904	EEAFC0J101H	ELECTROLYTIC 6.3V 100UF	
C905	VCUSQBA105KB	C CHIP 10V 1UF	
C906	ECQV1H104JM2	POLYESTER 50V 0.1UF	
C907	ECUV1C104KBV	C CHIP 16V 0.1UF	
C908	EEAFC0J101H	ELECTROLYTIC 6.3V 100UF	
C909	ECUV1H151JCV	C CHIP 50V 150PF	
C910	MCUV2A332JUM	C CHIP 100V 3300PF	⚠
C911	EEAFC0J470H	ELECTROLYTIC 16V 47UF	
C912	EEAFC1C470H	ELECTROLYTIC 16V 47UF	
C913	ECUV1C104KBV	C CHIP 16V 0.1UF	
C914	ECUV1C104KBV	C CHIP 16V 0.1UF	
C915	DE405B151K1K	CERAMIC 1KV 150PF	⚠
C916	ECEA1HKS010I	ELECTROLYTIC 50V 1UF	
C917	ECKR2H331KB5	CERAMIC 50V 330PF	⚠

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L901	VLQ0319K150	COIL CHIP 15UH	
L902	VLQ0426J220	COIL CHIP 22UH	
L903	ELH5L3105	LINEALITY COIL	


PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P902	VJPW0254	CONNECTOR 5P	
P903	VJPW0004J1	CONNECTOR 4P	



FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP901	LSJS09AA006	CONNECTOR 6P	

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T901	ETF08L204A	TRANSFORMER FLYBACK	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
701	VEKW1639	CRT SOCKET UNIT	
703	ELY05V583C	DEFLECTION YOKE	
704	M01LSX07WB01	CRT	
705	LSEK0375	CONNECTOR CABLE W/PLUG,DC5V	

12.3.3. LIQUID CRYSTAL DISPLAY C.B.A.

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC9001	AN2545FHQ	IC, LINEAR	
IC9001	AN2545NFHQ	IC, LINEAR	
IC9002	TA75S558FTEL	IC, LINEAR	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1203	UN5112	TRANSISTOR SI PNP CHIP	
Q1203	DTA124EUA106	TRANSISTOR SI PNP CHIP	
Q1206	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1206	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1207	UN5212	TRANSISTOR SI NPN CHIP	
Q1207	DTC124EUA106	TRANSISTOR SI NPN CHIP	
Q1208	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1208	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1209	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1209	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1210	UN5213	TRANSISTOR SI PNP CHIP	
Q1210	DTC144EUA106	TRANSISTOR SI NPN CHIP	
Q1211	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1211	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1212	2SB1218A	TRANSISTOR SI PNP CHIP	
Q1212	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q1213	2SD2351T106V	TRANSISTOR SI NPN CHIP	
Q1213	2SD2351T106W	TRANSISTOR SI NPN CHIP	
Q1214	2SD1819A	TRANSISTOR SI NPN CHIP	
Q1214	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q1215	UN5212	TRANSISTOR SI NPN CHIP	
Q1215	DTC124EUA106	TRANSISTOR SI NPN CHIP	
Q9004	UN5212	TRANSISTOR SI NPN CHIP	
Q9004	DTC124EUA106	TRANSISTOR SI NPN CHIP	
Q9005	UN5114	TRANSISTOR SI PNP CHIP	
Q9005	DTA114YUA106	TRANSISTOR SI PNP CHIP	
Q9051	2SD1119	TRANSISTOR SI NPN CHIP	⚠
Q9051	2SD2150T100R	TRANSISTOR SI NPN CHIP	⚠
Q9052	2SD1119	TRANSISTOR SI NPN CHIP	⚠
Q9052	2SD2150T100R	TRANSISTOR SI NPN CHIP	⚠
Q9053	2SB1218A	TRANSISTOR SI PNP CHIP	
Q9053	2SA1576A106R	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1203	MA8056-LTX	DIODE ZENER CHIP 5.6V	
D1204	MA8120-H	DIODE ZENER CHIP 12V	
D1206	MA8068-M	DIODE ZENER CHIP 6.8V	


RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R1215	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R1216	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R1217	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R1218	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R1219	ERJ3GEYJ561V	MGF CHIP 1/16W 560	
R1220	ERJ3GEYJ562V	MGF CHIP 1/16W 5.6K	
R1222	ERJ3GEYJ393V	MGF CHIP 1/16W 39K	
R1223	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R1224	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R1225	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R1226	ERJ3GEYJ104V	MGF CHIP 1/16W 100K	
R1227	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R9003	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R9004	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R9005	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R9006	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R9010	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9011	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9012	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9013	ERJ3GEYJ561V	MGF CHIP 1/16W 560	
R9014	ERJ3GEYJ153V	MGF CHIP 1/16W 15K	
R9015	ERJ3GEYJ123V	MGF CHIP 1/16W 12K	
R9016	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R9017	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R9018	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R9019	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R9020	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9021	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9022	ERJ3GEYJ101V	MGF CHIP 1/16W 100	
R9023	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R9024	ERJ3GEYJ104V	MGF CHIP 1/16W 100K	
R9025	ERJ3GEYJ682V	MGF CHIP 1/16W 6.8K	
R9026	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R9027	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R9028	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R9029	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R9030	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R9031	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R9032	ERJ3GEYJ104V	MGF CHIP 1/16W 100K	
R9033	ERJ3GEYJ333V	MGF CHIP 1/16W 33K	
R9051	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
R9054	ERJ3GEYJ222V	MGF CHIP 1/16W 2.2K	
VR9001	VRVW0024	VARIABLE CHIP 10K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C1204	VCUSJEJ105KB	C CHIP 6.3V 1UF	
C1206	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1207	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1208	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1209	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1210	ECUV1E103KBV	C CHIP 25V 0.01UF	
C1211	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1212	ECUV1C104KBV	C CHIP 16V 0.1UF	
C1213	ECUV1E103KBV	C CHIP 25V 0.01UF	
C9003	ECST0JY475	TANTALUM CHIP 6.3V 4.7UF	
C9007	ECUV1A105ZFV	C CHIP 10V 1UF	
C9008	ECUV1C104ZFN	C CHIP 16V 0.1UF	
C9009	NMA0J226MTR	ELECTROLYTIC CHIP 6.3V 22UF	
C9010	ECUV1H681KBV	C CHIP 50V 680PF	
C9011	ECUV1C104KBV	C CHIP 16V 0.1UF	
C9012	ECUV1C104KBV	C CHIP 16V 0.1UF	
C9013	VCUSJBJ225KB	C CHIP 6.3V 2.2UF	
C9014	ECUV1H152KBV	C CHIP 50V 1500PF	
C9015	ECST0JY475	TANTALUM CHIP 6.3V 4.7UF	
C9016	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C9017	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9018	ECUV1C104KBV	C CHIP 16V 0.1UF	
C9019	ECST1CY475	TANTALUM CHIP 16V 4.7UF	
C9020	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9021	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9022	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9023	VCUSQAC225KB	C CHIP 16V 2.2UF	
C9024	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9025	ECUV1H151JCV	C CHIP 50V 150PF	
C9026	ECUV1C225ZFN	C CHIP 16V 2.2UF	
C9027	ECUV1C104KBV	C CHIP 16V 0.1UF	
C9028	VCUSQBC105KB	C CHIP 16V 1UF	
C9029	ECUV1C104ZFN	C CHIP 16V 0.1UF	
C9031	ECST0JY106	TANTALUM CHIP 6.3V 10UF	
C9032	ECUV1C104ZFN	C CHIP 16V 0.1UF	
C9051	ECUV1A106KBP	C CHIP 10V 10UF	
C9052	ECHU1H273JB5	POLYESTER CHIP 50V 0.027UF	
C9053	LSCUCAD150J	C CHIP 2KV 15PF	
C9054	ECUV1C104ZFN	C CHIP 16V 0.1UF	
C9055	LSCUCAD150J	C CHIP 2KV 15PF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L1201	VLQ0319K100	COIL CHIP 10UH	
L1202	ELJFA150KF2	COIL CHIP 15UH	
L1203	LSLQK05S100M	CHOKE COIL 10UH	
L9001	VLQ0426J150	COIL CHIP 15UH	
L9003	VLQ0426J150	COIL CHIP 15UH	
L9004	VLQ0426J150	COIL CHIP 15UH	
L9005	VLQ0426J150	COIL CHIP 15UH	
L9006	VLQ0426J150	COIL CHIP 15UH	
L9007	VLQ0426J150	COIL CHIP 15UH	
L9051	SLF6028T680M	CHOKE COIL 68UH	


FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP1201	LSJSQG22DG	CONNECTOR 22P	
FP9002	LSJSRF24DG	CONNECTOR 24P	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
PR9051	LSSF003C10T	FUSE 32V 1A	
PR9051	LSSF007C10T	FUSE 32V 1A	
PR9051	LSSF016C10T	FUSE 32V 1A	

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T9051	ETJ11K95AM	TRANSFORMER	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
706	VMZW0668	INSULATION SHEET, PLASTIC	

12.3.4. RELAY C.B.A

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R9101	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R9101	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R9102	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R9103	ERJ3GEYJ683V	MGF CHIP 1/16W 68K	
R9104	ERJ3GEYJ273V	MGF CHIP 1/16W 27K	

FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP9101	LSJS05AA022	CONNECTOR 22P	
FP9102	LSJSRF24DG	CONNECTOR 24P	

12.3.5. PC JACK C.B.A.

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK1	LSJJ0137	MINI JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
710	VEKW1791	PC JACK CABLE W/PLUG,DC15V,DC-15V	

MECHANISM FPC UNIT



TERMINAL VOLTAGE	OPERATION BUTTON		
	KEY DATA 2 (PIN 84)	KEY DATA 3 (PIN 82)	KEY DATA 4 (PIN 81)
4.32-4.50V	---	LIGHT (OFF)	---
3.42-3.78V	STILL	---	MENU
2.52-2.88V	REW/ SEARCH	---	---
1.62-1.98V	FF/ SEARCH	---	TITLE
0.72-1.08V	PLAY	LIGHT (AUTO)	DOWN
0-0.18V	STOP	LIGHT (ON)	UP

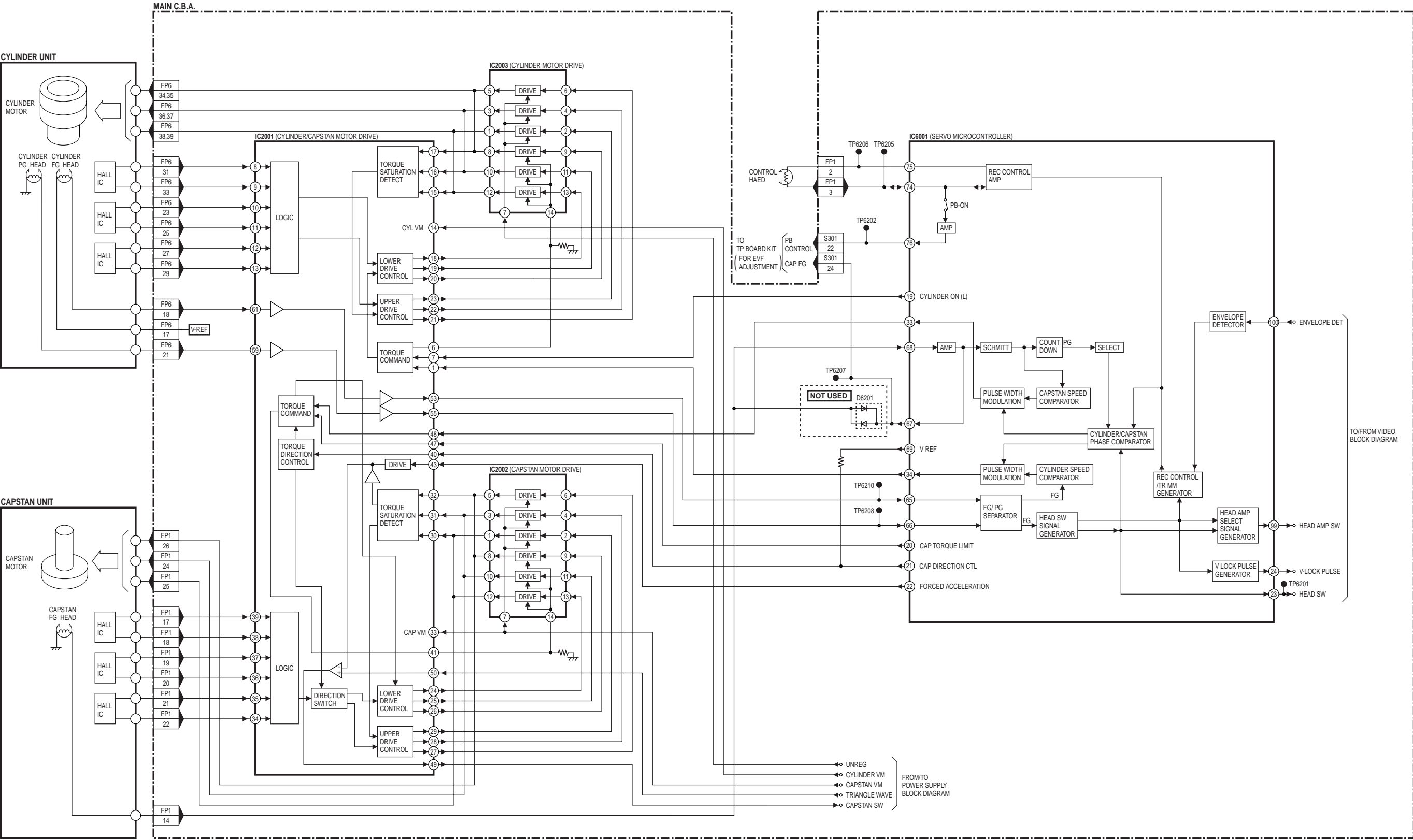
***2 NOTE**

In case that the dew sensor detects dew condensation, the voltage of pin 88 becomes approx. 0.3V or over.

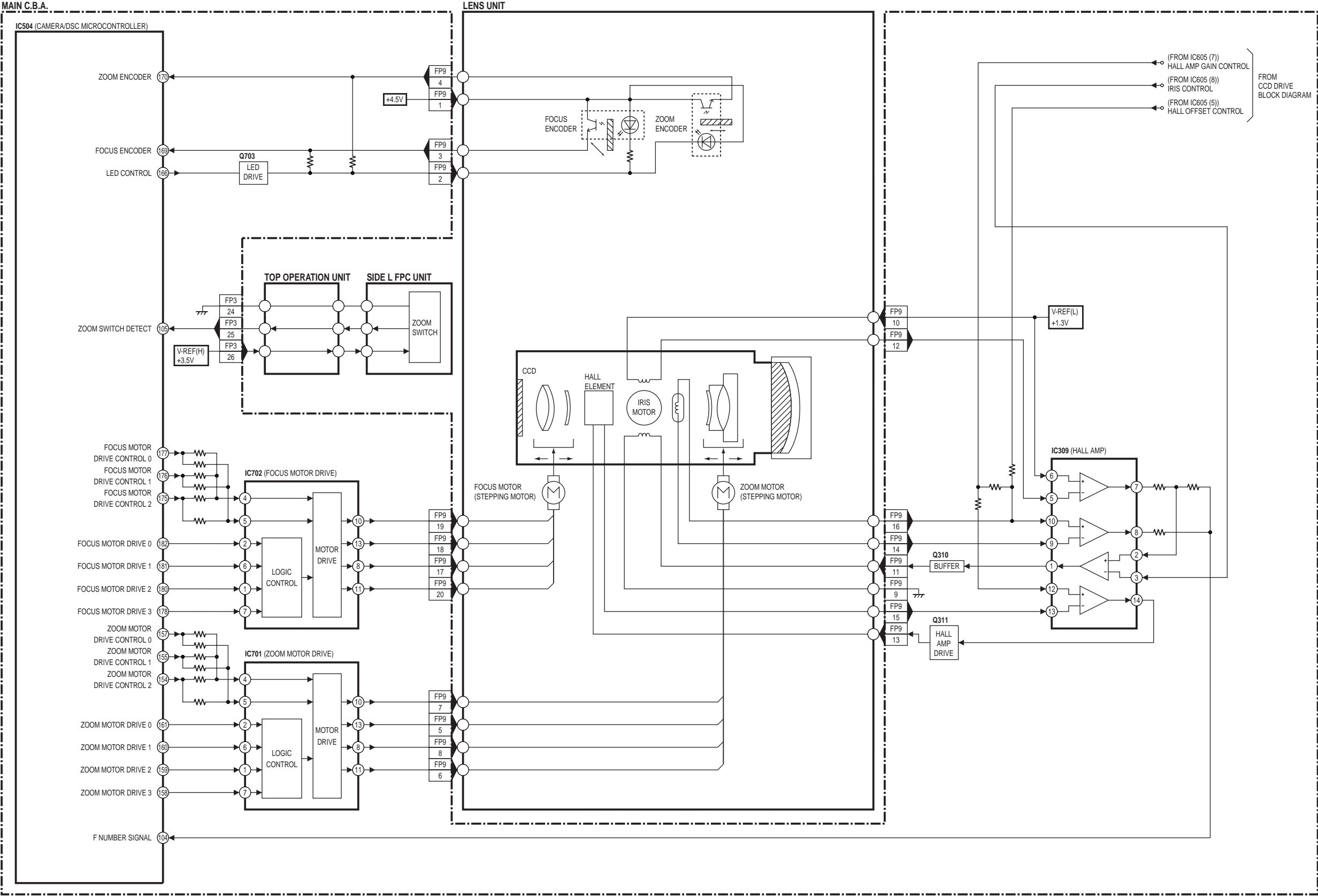
***3 NOTE**

To defeat the safety function, connect a diode between TP6011 and TP6012, or select the H. Safety defeat in service mode. Refer to NOTE1 of "Extension cables for service" in service notes section for more information.

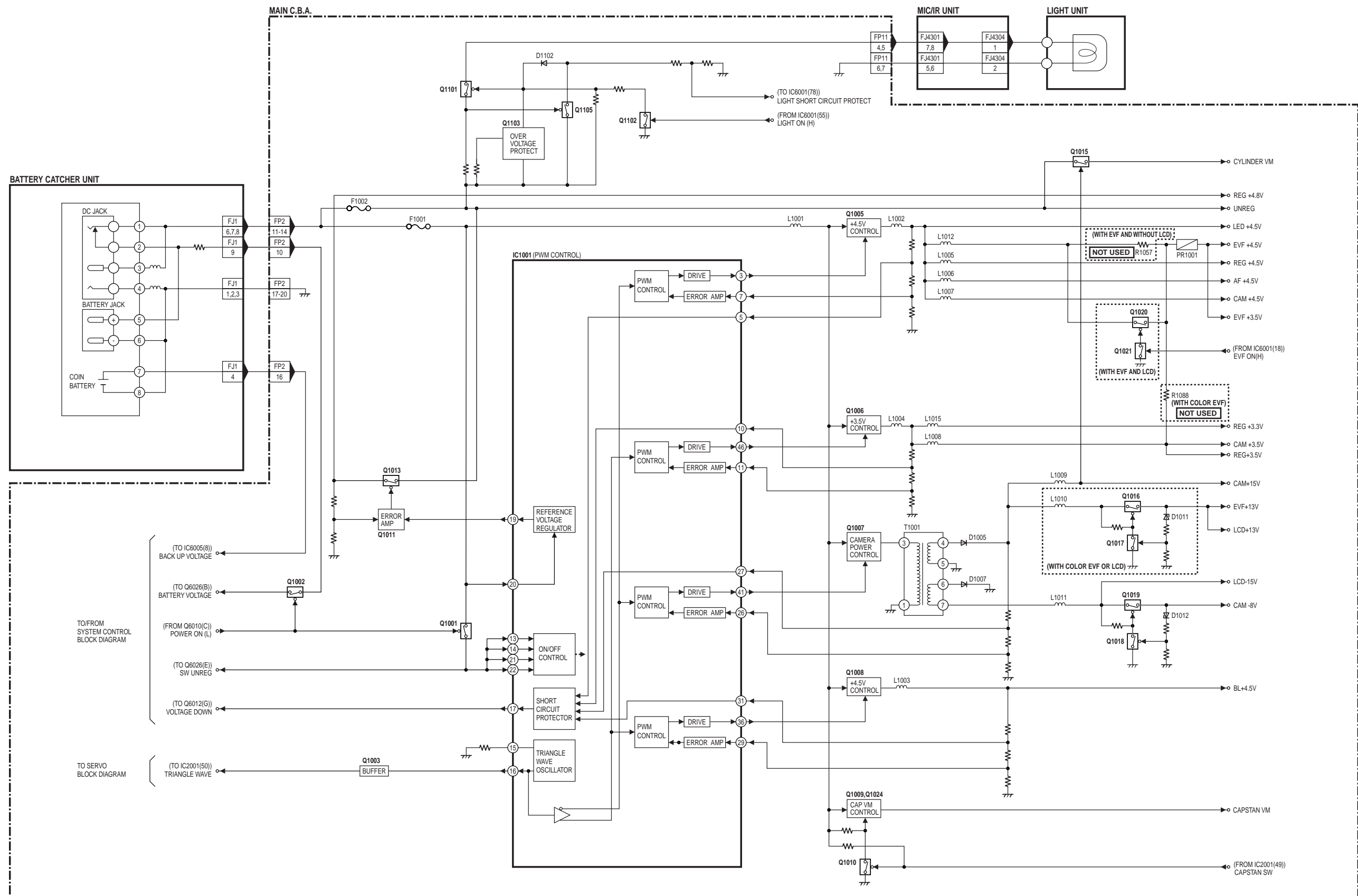
SERVO BLOCK DIAGRAM



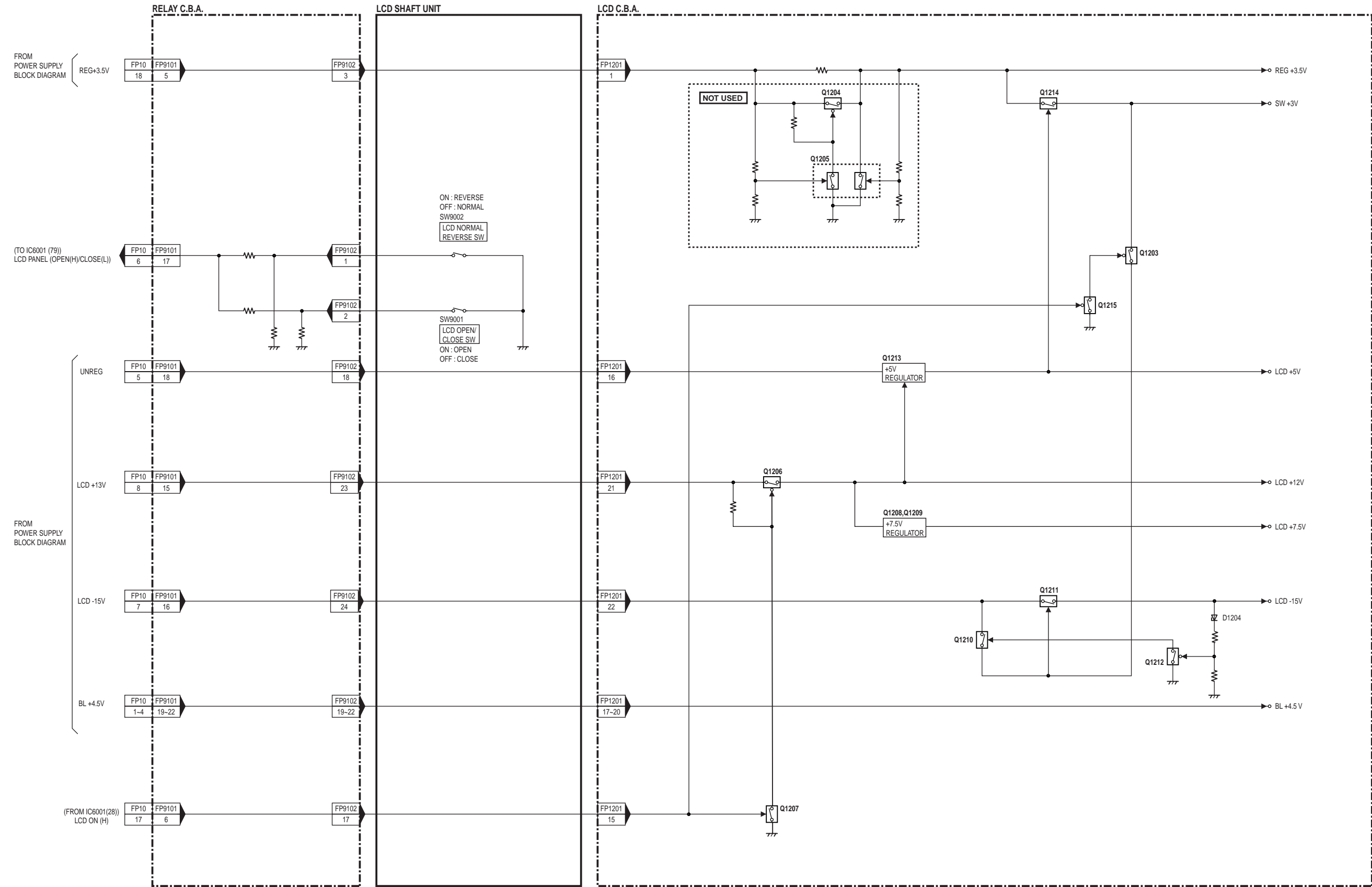
AF BLOCK DIAGRAM



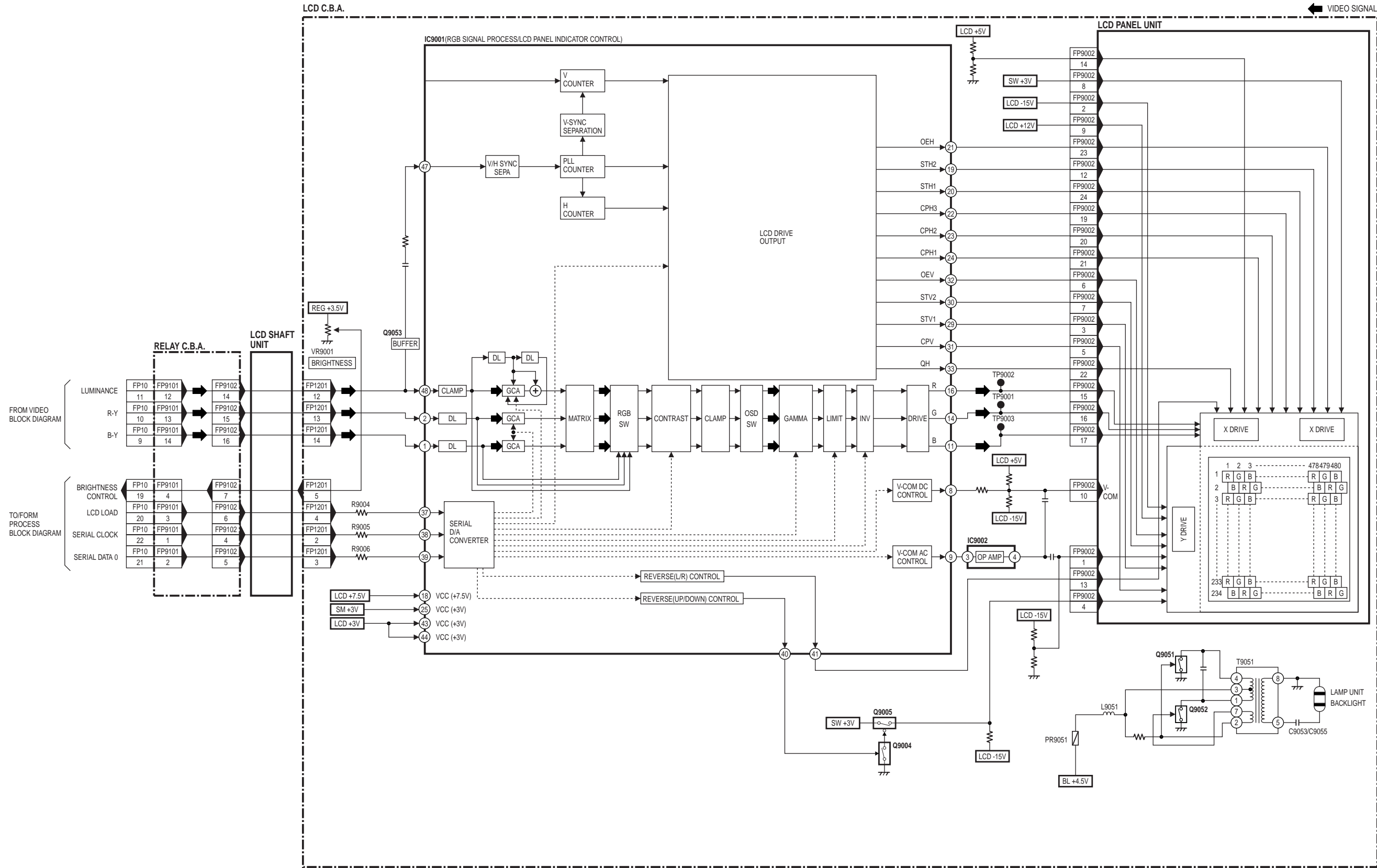
POWER SUPPLY BLOCK DIAGRAM



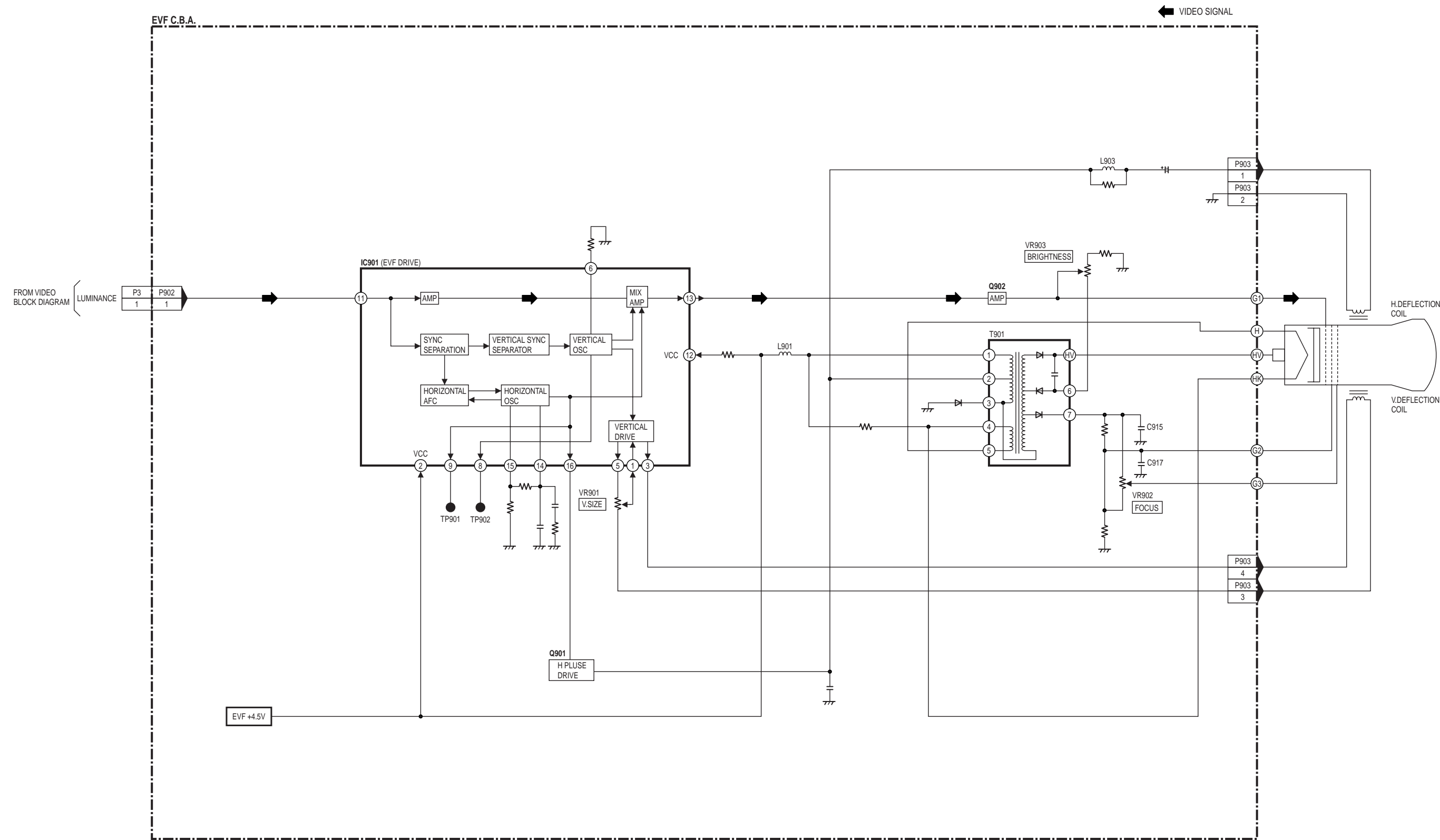
LCD POWER BLOCK DIAGRAM



LCD BLOCK DIAGRAM



EVF BLOCK DIAGRAM



The following ERROR No. will be displayed on the Camcorder LCD Monitor or EVF Monitor when an Error occurred.


ERROR No.	Error Description	Possible solution
U11	CF Card is not formatted. OR CF Card is not in DOS FORMAT.	Format the CF Card in a Windows PC. If still NG, the CF Card is defective. Use a new CF Card. ↓ Still NG May be caused by bad contact between CF Card and IC504(Camera/DSC Microcontroller.) Check following items and repair or replace if necessary. · Replace CF Card Connector Unit(Ref No. 218) · Replace IC504(Camera/DSC Microcontroller) · Repair contact(solder) of signal lines between IC504 and FP13 connector(Pin 3, 5, 7, 9, 11, 13~23, 26~36, 38) on the Main C.B.A. (There are some 100 ohm resistors(R524,R525, etc.))
U12	CF Card Format Error 1 (May be caused by interruption, such as AC OFF, or removal of the CF Card during accessing the system area of the memory address.)	Format the CF Card in a Windows PC. If still NG, the CF Card is defective. Use a new CF Card.
U13	CF Card Format Error 2 (May be caused by interruption, such as AC OFF, or removal of the CF Card during accessing the system area of the memory address.)	Check the CF Card for error, and correct the error using the "SCAN DISK" function of a Windows PC. If still NG, format the CF Card.
U14	Communication Error (CF Card <--> Camcorder)	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Install a new CF Card in the Camcorder.</div> <div style="text-align: center;">↓</div> <div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">Does the camcorder works OK ?</div> <div style="text-align: center;">NG →</div> <div style="border: 1px solid black; padding: 5px;">May be caused by IC504 (Camera Microcontroller) malfunction. Replace IC504 on the Main C.B.A.</div> </div> <div style="text-align: center;">↓ OK</div> <div style="border: 1px solid black; padding: 5px;">Caused by CF Card error. Format the original CF Card. If still NG, the original CF Card is defective. Use a new one.</div>
U15	No CF Card Memory	Delete the data in the CF Card which was recorded by other compatible products. OR Use a new CF Card.
U16	Captured image (ctg folder) limit exceeded (Max. 215 folders)	Delete the data in the CF Card which was recorded by other compatible products. OR Use a new CF Card.
U17	Captured image (JPEG file) limit exceeded (Max. 699 files)	Delete the data in the CF Card which was recorded by other compatible products. OR Use a new CF Card.
U30	Error other than above	May be caused by IC504 (Camera Microcontroller) malfunction. Replace IC504 on the Main C.B.A.

Note: When the CF Card Connector Unit connector is disconnected from FP13 connector on the Main C.B.A., "NO CF CARD" appears on-screen. Connect the CF Card Connector Unit connector firmly.

MAIN C.B.A. LSEP8070E1 (A) / LSEP8070F1 (B)

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 1.5A 24/63V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE 1.5A 24/63V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 2.5A 24/32V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE 2.5A 24/32V

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

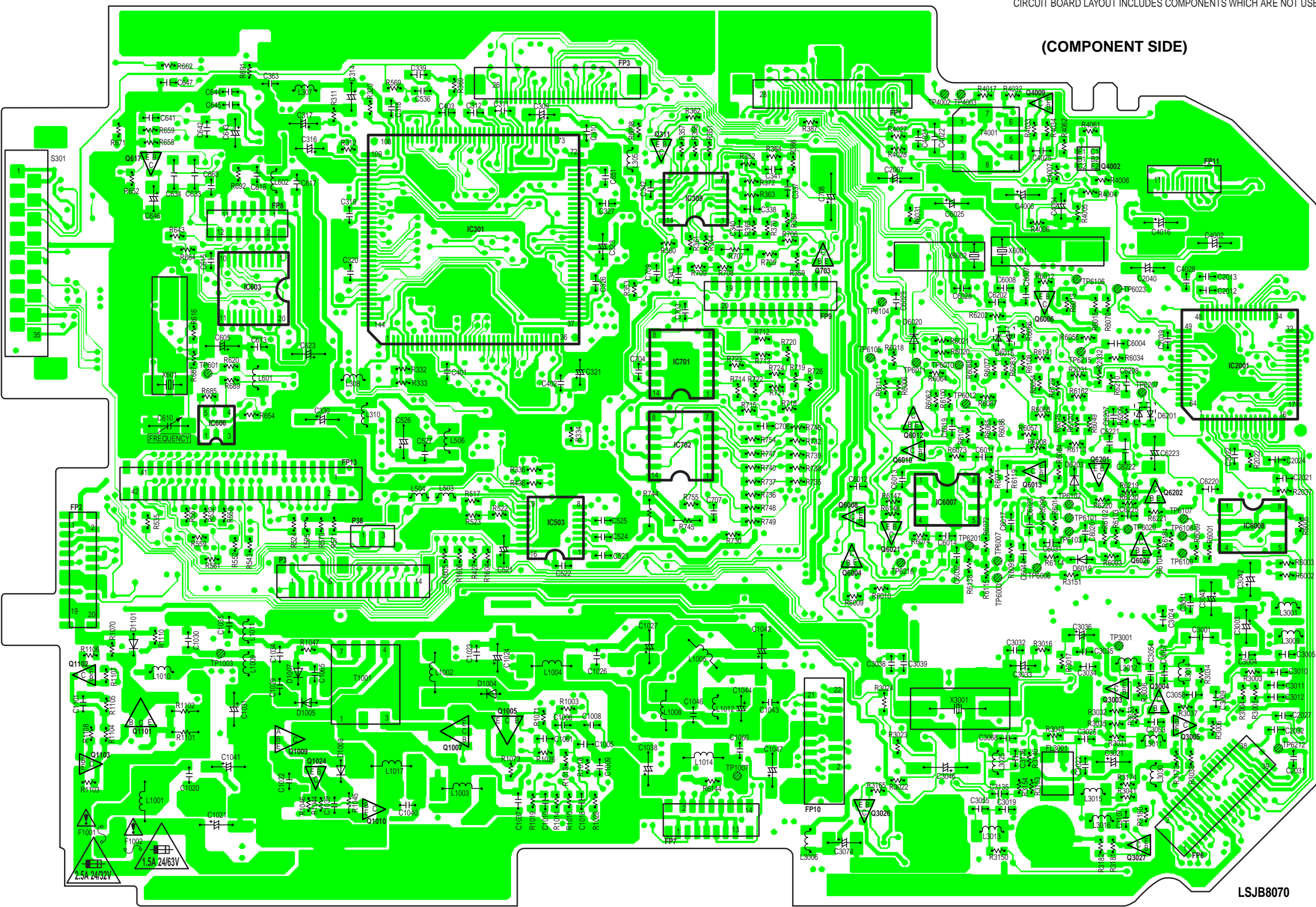
NOTE: CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS. FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING, PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.
NOTE: CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B

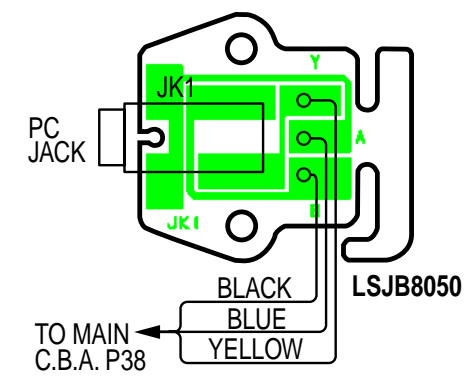
NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE: MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.



(COMPONENT SIDE)

PC JACK C.B.A. LSEP8050A1



LSJB8070

MAIN C.B.A. LSEP8070E1 (A) / LSEP8070F1 (B)

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

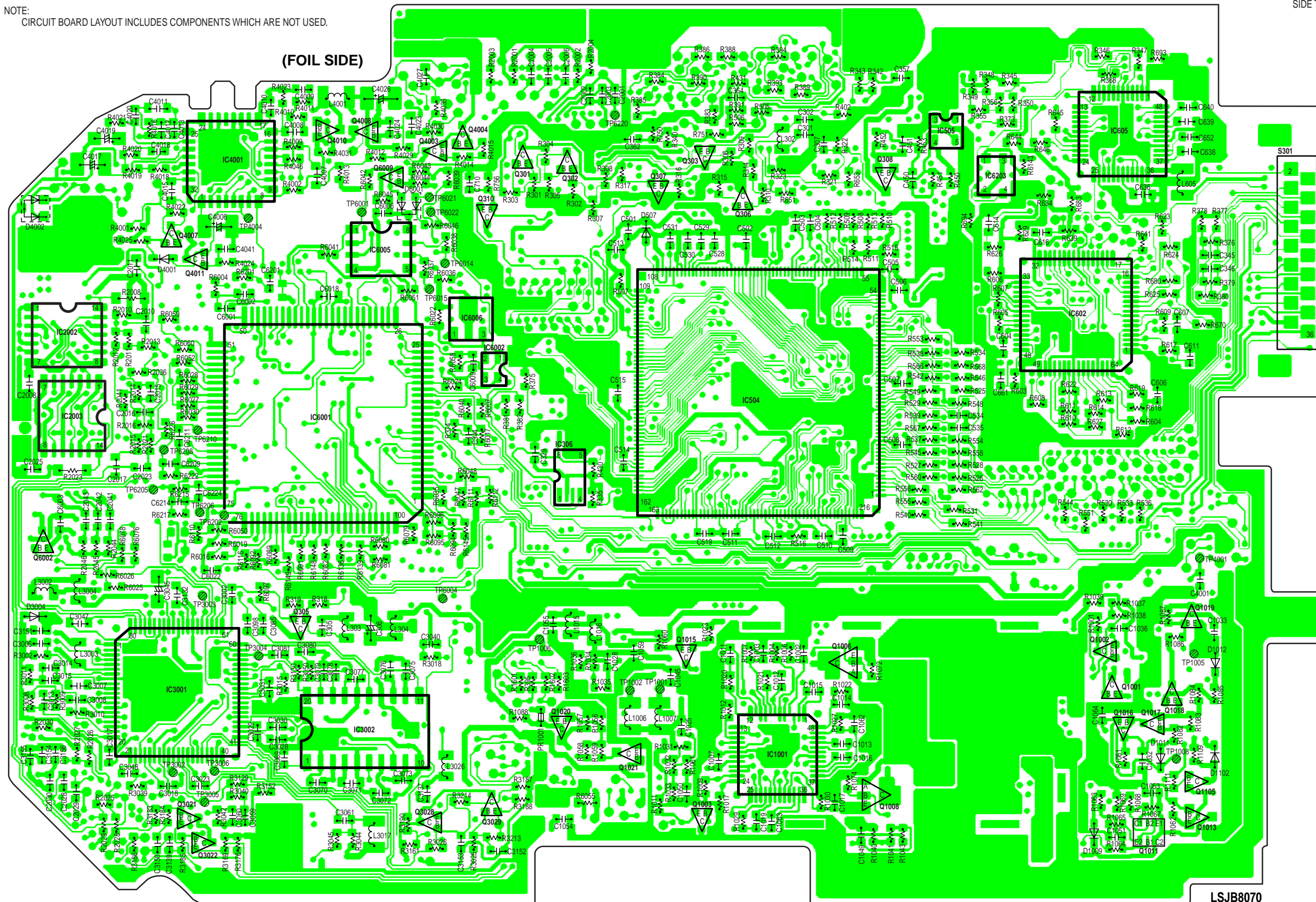
NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


NOTE: MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT PATETRNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

COMPARISON CHART OF MODELS & MARKS

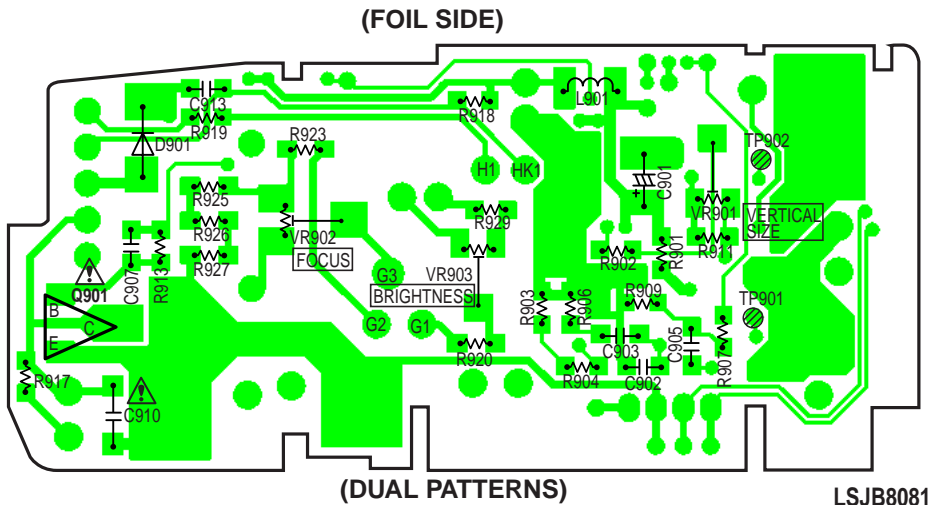
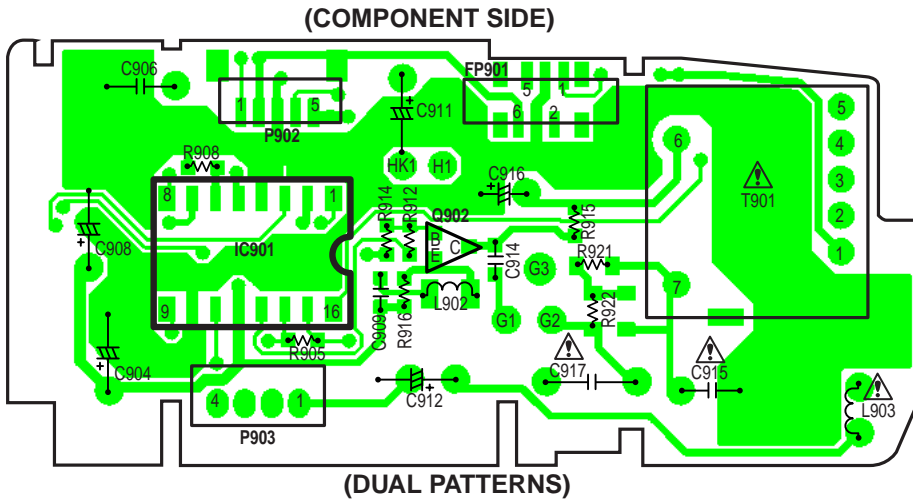
MODEL	MARK
PV-L671	A
PV-L691	B



LSJB8070

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

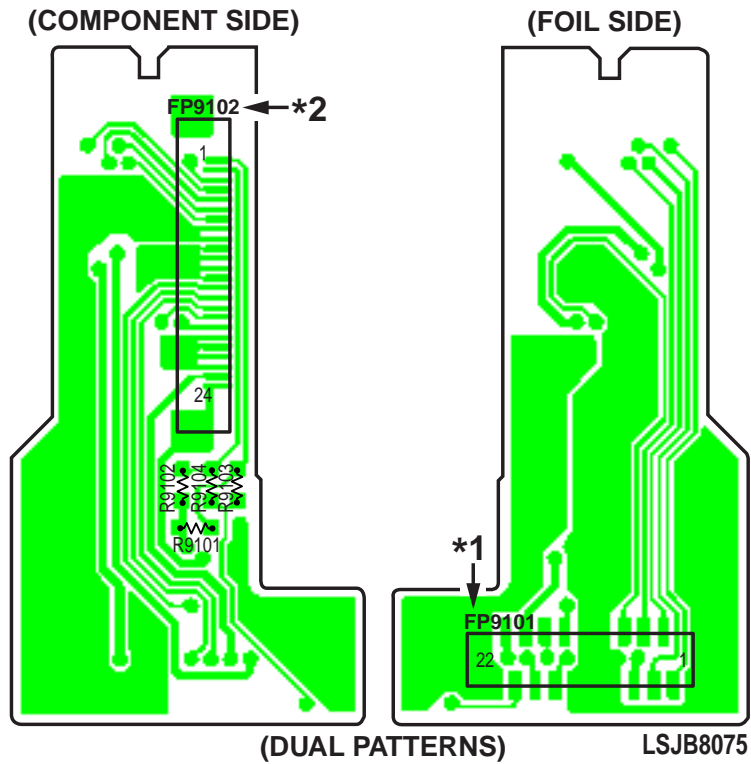
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.



LSJB8081

NOTE:

FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.



*1,*2 NOTE:

FP9001 AND FP9002 WERE PRINTED BY MISTAKE ON EARLY PRODUCTS.

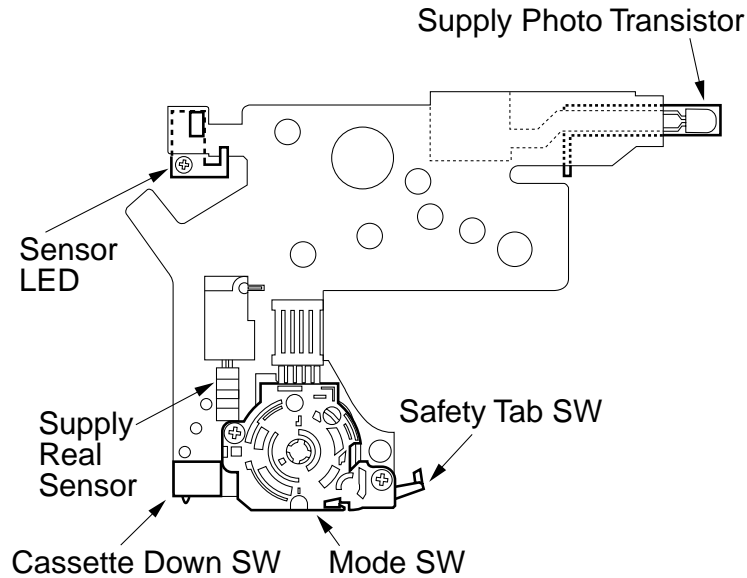
MECHANISM FPC UNIT

NOTE:

MECHANISM FPC UNIT IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.

NOTE:

FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



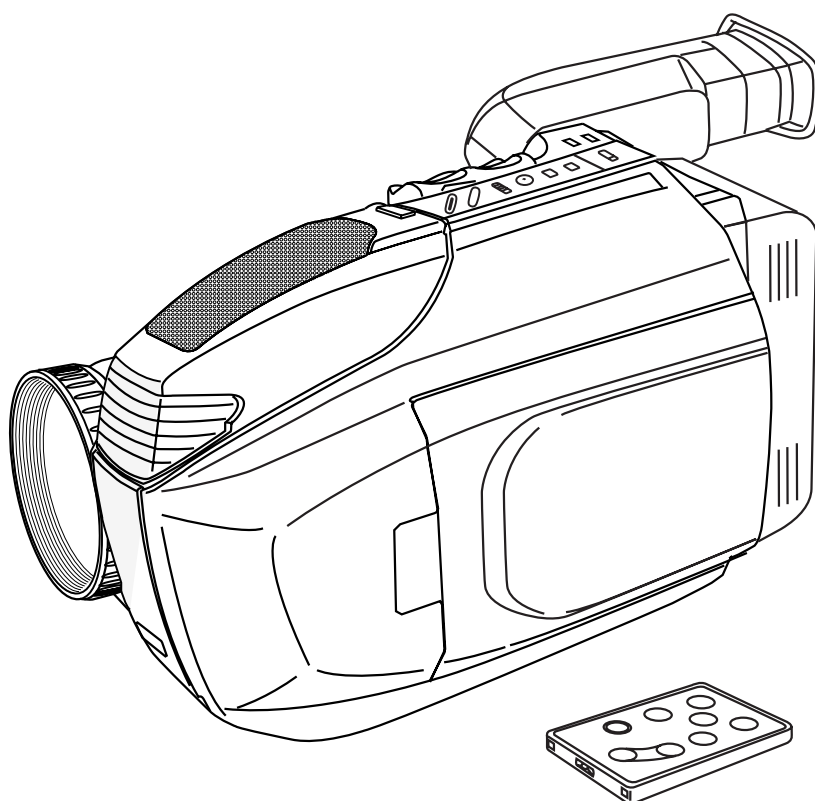
Palmcorder®
PalmSight™



Panasonic®

Camcorder
Operating Instructions

Model No. **PV-L671**



Please read these instructions carefully before attempting to operate this product.
Please save this manual.

Guía para rápida consulta en español está incluida.

**For assistance, please call : 1-800-211-PANA(7262) or
send e-mail to : consumerproducts@panasonic.com**

Getting Started

Basic Operation

Special Features

For Your Information

Things You Should Know

Thank you for choosing Panasonic!

You have purchased one of the most sophisticated and reliable products on the market today. Used properly, it will bring you years of enjoyment. Please take time to fill in the information at the right.

The serial number is on the tag located on the rear side of your Camcorder. Be sure to **retain this manual** as your convenient Camcorder information source.

Date of Purchase

Dealer Purchased From

Dealer Address

Dealer Phone No.

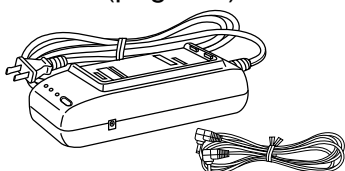
Model No.

Serial No.

Unpack your Camcorder

These accessories are provided in order to set up or use your Camcorder.

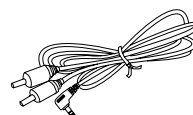
1 pc. AC Adaptor
(PV-A19) with DC Power
Cable (page 10)



1 pc. Battery Pack
(PV-BP18) (pages 9, 10)



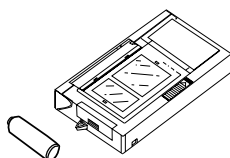
1 pc. Audio/Video Cable
(LSJA0283) (pages 21, 22)



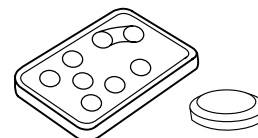
1 pc. Shoulder Strap
(LSFC0012) (page 50)



1 pc. VHS PlayPak
(PV-P1/VYMW0009) and
one "AA" battery (page 21)



1 pc. 8-Function Remote
(VSQW0038) with one
CR2025 Battery. (page 19)



1 pc. CR2025 Clock Battery
(VSBW0004)
(installed in Camcorder)
(page 51)



Remote has been loaded
with battery. (page 51)

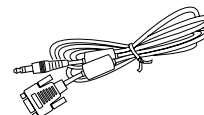
1 pc. Digital PhotoShot Disk
for Windows 95/98/Me/2000
(LSFT0249) (page 42)



1 pc. CompactFlash Card
[8 MB] (LSFA0009B)
(page 34)



1 pc. PC Connection cable
(RS232C-2.5P)
(LSJA0276) (page 42)



CompactFlash Card is a trademark of SanDisk Corporation.

Microsoft and Windows are registered trademarks of Microsoft in the United States and other countries.

All product/brand names are trademarks or registered trademarks of the respective holders.

Things You Should Know

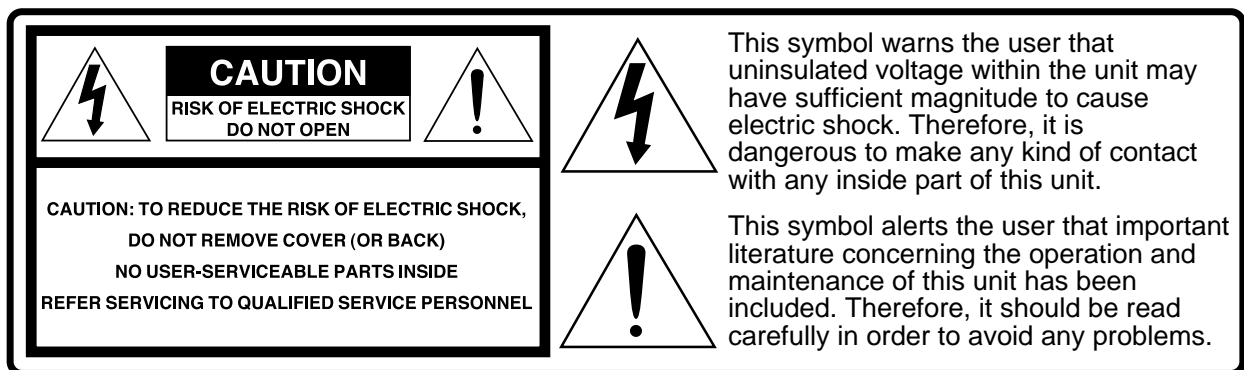
Safety Precautions

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

Your Compact VHS Camcorder is designed to record and play back in Standard Play (SP) and Super Long Play (SLP) modes. You can also play a Compact VHS Camcorder recording on your VHS VCR using the VHS PlayPak supplied.

This Camcorder is equipped with the **HQ** System to provide excellent video pictures, and is compatible with standard VHS equipment.

It is recommended that only cassette tapes that have been tested and inspected for use in VCR machines with the **VHS** and/or **VHS** mark be used.



The above markings are located on the appliance's bottom cover.

FCC Warning : To assure continued FCC compliance, the user must use only provided shielded interfacing cable with ferrite cores when connecting to computer. Also, any unauthorized changes or modifications to this equipment would void the users authority to operate.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with Part 15 and part 18 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when operated in a residential environment.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, use the equipment in another location and/or utilize an electrical outlet different from that used by the receiver.

If necessary, consult the dealer or an experienced radio/TV technician for help. You may find the booklet, 'Something About Interference' available from FCC local regional offices helpful.

This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz.

Important Safeguards

1. **Read Instructions** – All the safety and operating instructions should be read before the unit is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the unit and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and maintenance instructions should be followed.
5. **Cleaning** – Unplug this video unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a dry cloth for cleaning.
6. **Attachments** – Do not use attachments not recommended by the video product manufacturer as they may be hazardous.
7. **Water and Moisture** – Do not use this video unit near water – for example near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
8. **Accessories** – Do not place this video unit on an unstable cart, stand, tripod, bracket, or table. The video unit may fall, causing serious injury to a child or adult, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video unit. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
9. **Ventilation** – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video unit and to protect it from overheating. These openings must not be blocked or covered. Never place the video unit on a bed, sofa, rug, or other similar surface, or near or over a radiator or heat register. This video unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **Power Sources** – This video unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video units intended to be operated from battery power, or other sources, refer to the operating instructions.

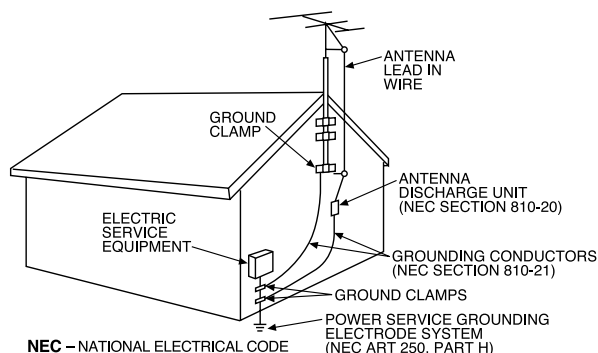


11. **Grounding or Polarization** – This video unit may be equipped with either a polarized 2-wire AC (Alternating Current) line plug (a plug having one blade wider than the other) or 3-wire grounding type plug, a plug having a third (grounding) pin.

The 2-wire polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

12. **Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Paying particular attention to cords of plugs, convenience receptacles, and the point where they exit from the unit.
13. **Outdoor Antenna Grounding** – If an outside antenna or cable system is connected to the video unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Part 1 of the Canadian Electrical Code, in USA Section 810 of the National Electrical Code, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.



14. **Lightning** – For added protection of this video unit receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video unit due to lightning and power-line surges.

Important Safeguards

- 15. Power Lines** – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- 16. Overloading** – Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- 17. Objects and Liquids** – Never push objects of any kind into this video unit through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind onto the video unit.
- 18. Servicing** – Do not attempt to service this video unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 19. Damage Requiring Service** – Unplug this video unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If any liquid has been spilled into, or objects have fallen onto, the video unit.
 - c. If the video unit has been exposed to rain or water.
 - d. If the video unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video unit to its normal operation.
 - e. If the video unit has been dropped or the cabinet has been damaged.
 - f. When the video unit exhibits a distinct change in performance – this indicates a need for service.
- 20. Replacement Parts** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
- 21. Safety Check** – Upon completion of any service or repairs to this video unit, ask the service technician to perform safety checks to determine that the video unit is in safe operating order.

Precautions

USE & LOCATION

- **TO AVOID SHOCK HAZARD ...** Your Camcorder and power supply should not be exposed to rain or moisture. Do not connect the power supply or operate your Camcorder if it gets wet. Your Camcorder has been designed for outdoor use, however it is not designed to sustain direct exposure to water, rain, sleet, snow, sand, dust, or a direct splashing from a pool or even a cup of coffee. This action could permanently damage the internal parts of your Camcorder. Do not attempt to disassemble this unit. There are no user serviceable parts inside. Unplug your Camcorder from the power supply before cleaning.
- **DO NOT AIM YOUR CAMCORDER AT THE SUN OR OTHER BRIGHT OBJECTS.**
- **DO NOT LEAVE THE CAMCORDER WITH THE EVF AIMED DIRECTLY AT THE SUN AS THIS MAY CAUSE DAMAGE TO THE INTERNAL PARTS OF THE EVF.**
- **DO NOT EXPOSE YOUR CAMCORDER TO EXTENDED HIGH TEMPERATURE ...** Such as, in direct sunlight, inside a closed car, next to a heater, etc... This action could permanently damage the internal parts of your Camcorder.
- **AVOID SUDDEN CHANGES IN TEMPERATURE ...** If the unit is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the unit.
- **DO NOT LEAVE YOUR CAMCORDER OR THE POWER SUPPLY TURNED ON WHEN NOT IN USE.**
- **STORAGE OF YOUR CAMCORDER ...** Store and handle your Camcorder in a manner that will not subject it to unnecessary movement (avoid shaking and striking). Your Camcorder contains a sensitive pick-up device which could be damaged by improper handling or storage.

CARE

- **TO CLEAN YOUR CAMCORDER ...** Do not use strong or abrasive detergents when cleaning your Camcorder body.
- **TO PROTECT THE LENS ...** Do not touch the surface of the lens with your hand. Use a commercial camcorder lens solution and lens paper when cleaning the lens. Improper cleaning can scratch the lens coating.
- **TO PROTECT THE FINISH OF YOUR CAMCORDER ...** Before handling your Camcorder, make sure your hands and face are free from any chemical products, such as suntan lotion, as it may damage the finish.

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Self Demo Mode

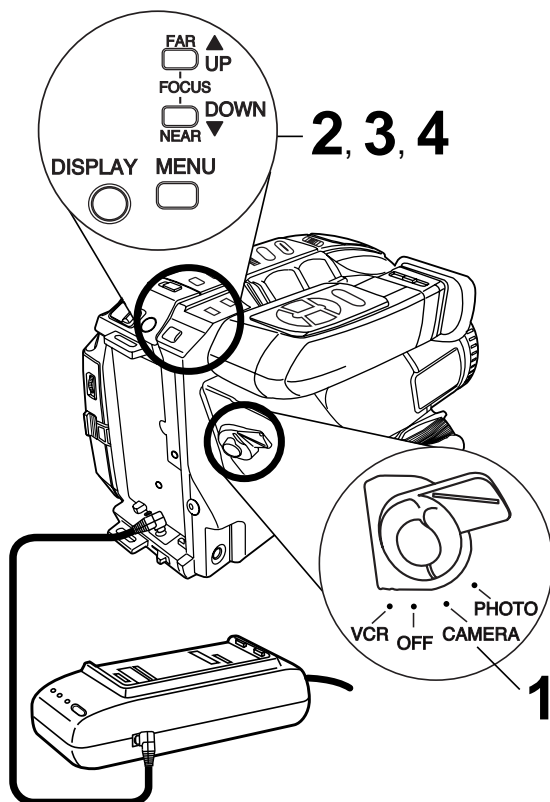
Self Demo mode is on when the screen below appears. To turn it off, follow steps 1-4 below.

EVF or LCD Monitor

Panasonic

ITS TAPES PLAY
IN YOUR VCR
YES, IT'S VHS!

26x LENS / 300x D.ZOOM
DIGITAL STABILIZATION
FULL-SIZE HEAD SYSTEM
AUTO/PHRASE TITLER

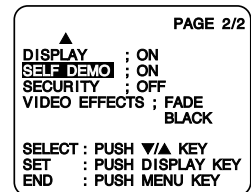


Before you begin...

- Connect Camcorder to power source.

1 Set POWER to CAMERA.

2 Press MENU for
MENU mode.
Press UP ▲ or
DOWN ▼ to select
SELF DEMO.



3 Press DISPLAY to select OFF.

4 Press MENU to exit.

Note:

- Self Demo stops automatically if battery is attached (page 9) and cassette tape is inserted (page 11).
- Inserting a tape alone (or attaching a partially charged battery) only temporarily stops Self Demo.
- Self Demo stops for 30 seconds when a function key other than Light, Play, Rewind Search, Fast Forward Search, Stop, and Still is pressed.

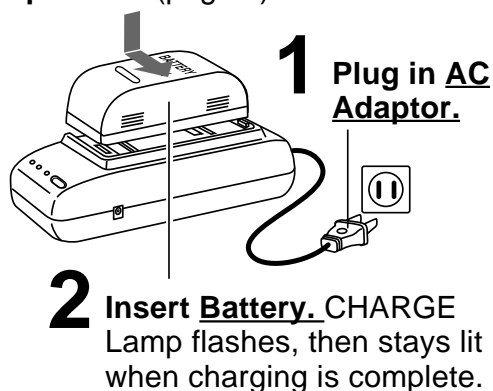
To turn Self Demo back on:

- Set to SELF DEMO : ON in MENU screen.

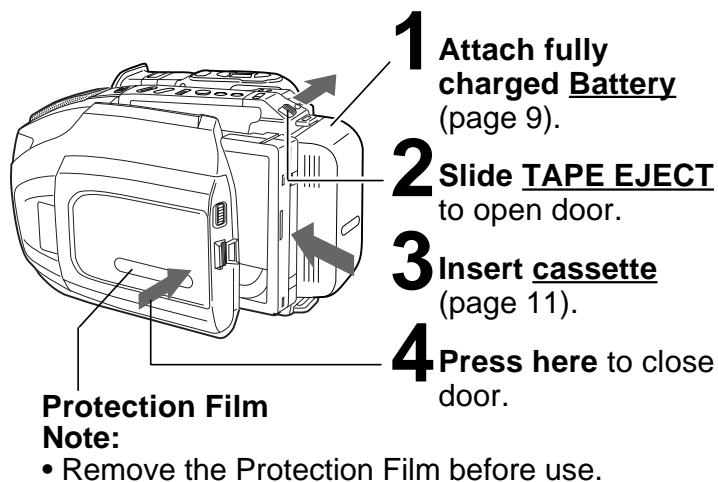
Quick Operation Guide

Charging the Battery Pack

Charge Battery Pack fully before operation (page 9).

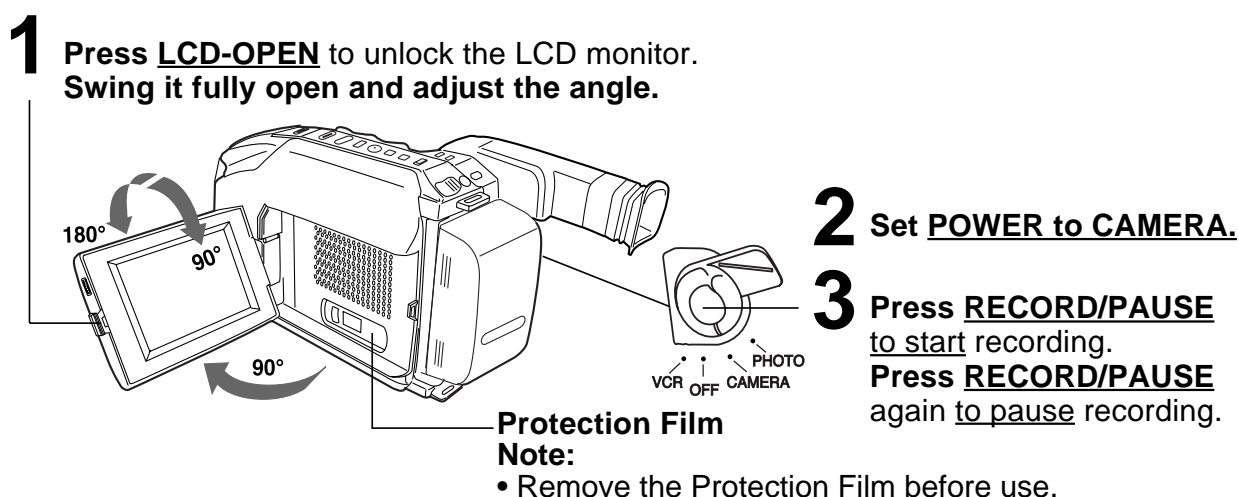


Insert Cassette



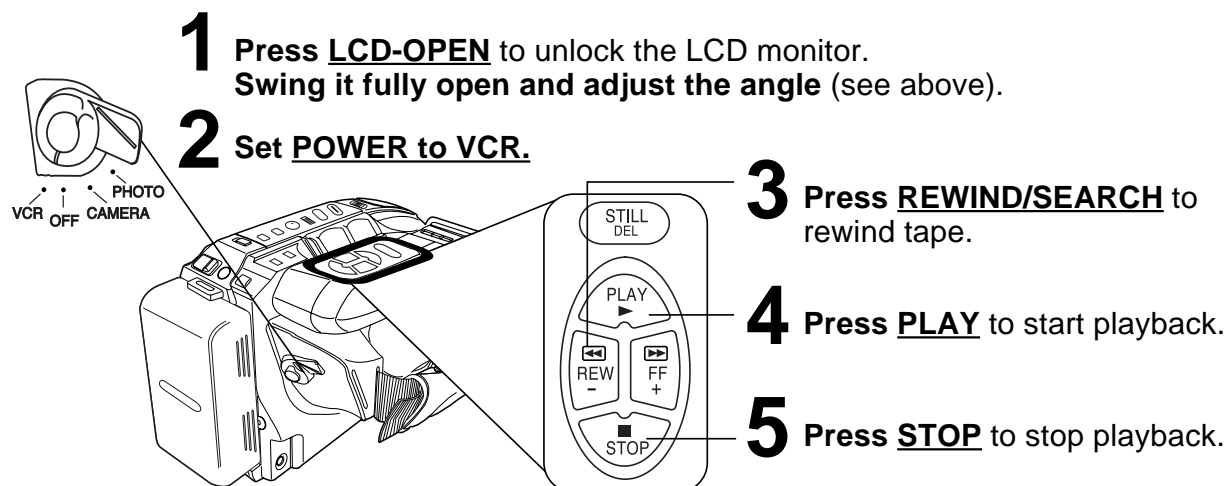
Camera Recording

When the LCD monitor is open, the EVF automatically turns OFF (page 16).



Playback using the LCD Monitor

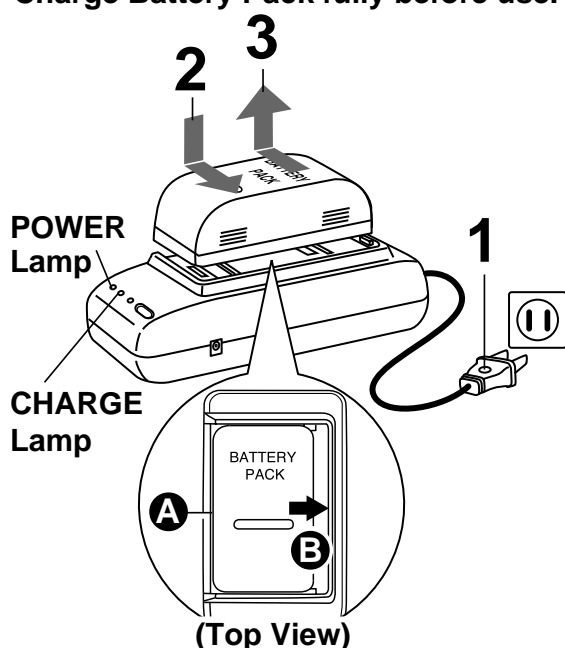
When the LCD monitor is open, the EVF automatically turns OFF (page 20).



Supplying Power

Charging the Battery Pack

Charge Battery Pack fully before use.



1 Plug in AC Adaptor.
POWER Lamp lights.

2 Insert Battery.
A Align left side of Battery with left edge of AC Adaptor.
B Press Battery down and slide in direction of arrow.

The CHARGE Lamp flashes, then stays lit when charging is complete.

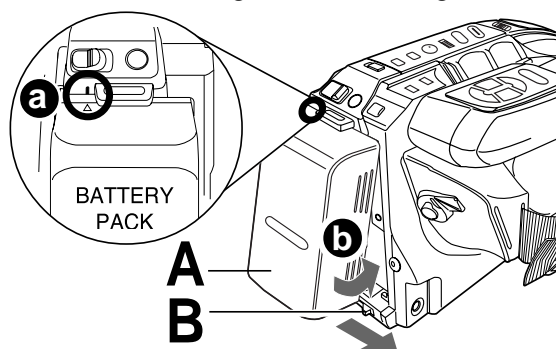
3 Remove Battery.
Slide Battery to the left and lift off.

Note:

- Charging takes about 1 and 1/2 hours.
- While the DC Power Cable (supplied) is connected to the AC Adaptor, the Battery cannot be charged.
- After charging 5 times, use Battery Refresh feature as explained below.
- Battery life gradually decreases after repeated use and recharging. If operation time becomes very short even after a sufficient charge, discard Battery properly (page 10).

Using the Battery Pack

A fully charged Battery provides a maximum of about 2 hours of continuous use (LCD monitor off) or about 1.5 hours (LCD monitor on). Actual time may vary due to operating conditions. Using the Built-in Light decreases operating time.

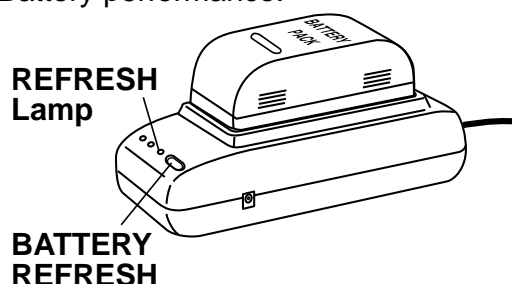


A Attach Battery.
a Insert top of Battery into top of mounting surface.
b Press and snap into place.

B Remove Battery.
Slide **BATTERY RELEASE** and remove Battery.

Battery Refresh

This feature completely discharges Battery before recharging begins. Use after every 5 charges for optimum Battery performance.



To use battery refresh, insert Battery on AC Adaptor (see steps 1~2 above), then press **BATTERY REFRESH**.

The REFRESH Lamp lights, then goes out when discharge is complete. Battery charging will then start automatically.

If **BATTERY REFRESH** is pressed by mistake, remove Battery from AC Adaptor and reinsert it for normal charging.

Note:

- Charging takes about 7 and 1/2 hours when Battery Refresh is used.
- Battery will not operate in extremely high temperatures.

Supplying Power

Battery Care

Caution:

- Charge only with specified charger.
- Battery can be charged within a temperature range of 10 °C (50 °F) and 35 °C (95 °F).
- Battery is normally warm after charging or just after use.
- Do not use an insufficiently charged or worn-out Battery.

Safety precautions:

- Do not get Battery near, or dispose of in fire.
- Do not directly connect (short circuit) the positive (+) and negative (–) terminals.
- Never attempt to disassemble or reassemble Battery.

To avoid Battery damage:

- Do not drop or jar Battery.
- Use Battery with specified units only.
- If Battery is used in extremely high temperatures, a safety device will automatically prevent operation.

To prolong Battery life:

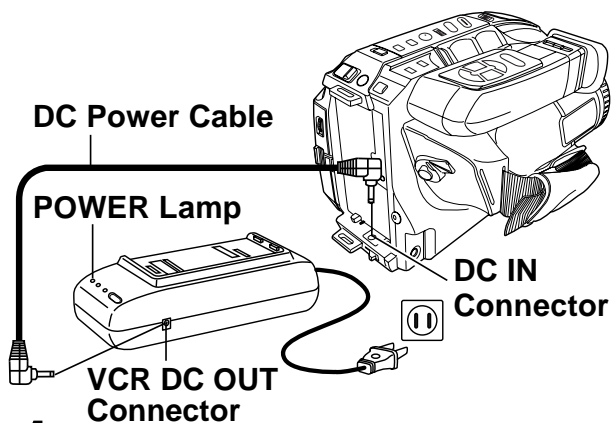
- While not in use, remove Battery from the Camcorder and AC Adaptor and store in a cool, dark, dry place.
- Keep Battery terminals clean.

U.S.A. CONSUMERS: ATTENTION:



The product you have purchased is powered by a nickel cadmium battery which is recyclable. At the end of its useful life, under various state and local laws, it is illegal to dispose of this battery into your municipal waste stream. Please call 1-800-8-BATTERY for information on how to recycle this battery.

AC Adaptor



1 Connect AC Adaptor VCR DC OUT to Camcorder DC IN with supplied DC Power Cable.

2 Plug in AC Adaptor. POWER Lamp lights.

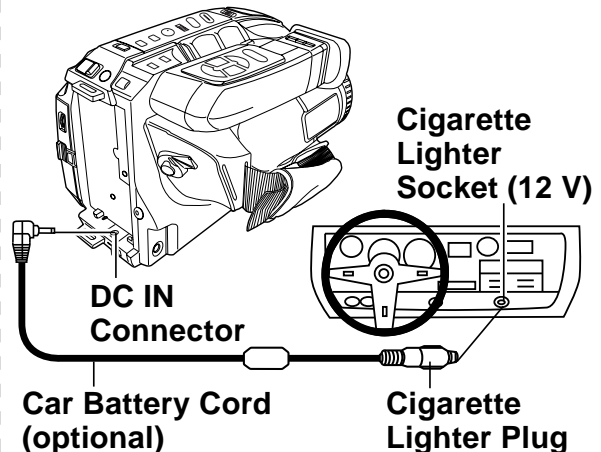
Note:

- While the DC Power Cable (supplied) is connected to the AC Adaptor, the Battery cannot be charged.
- When not in use, unplug AC Adaptor from AC outlet. (Adaptor uses 1.2 W of electricity while plugged in.)

CAUTION:

This unit will operate on 110/120/220/240 V AC. An AC plug adaptor may be required for voltages other than 120 V AC. Please contact either a local or foreign electrical parts distributor for assistance in selecting an alternate AC plug. We recommend using the accessory power plug adaptor (VJSS0070) in an area which has special AC outlets.

Car Battery Cord (Optional)



1 Connect PV-C16 Car Battery Cord (optional) to Camcorder DC IN.

2 **A** Start engine first.
B Plug Car Battery Cord into Cigarette lighter socket.

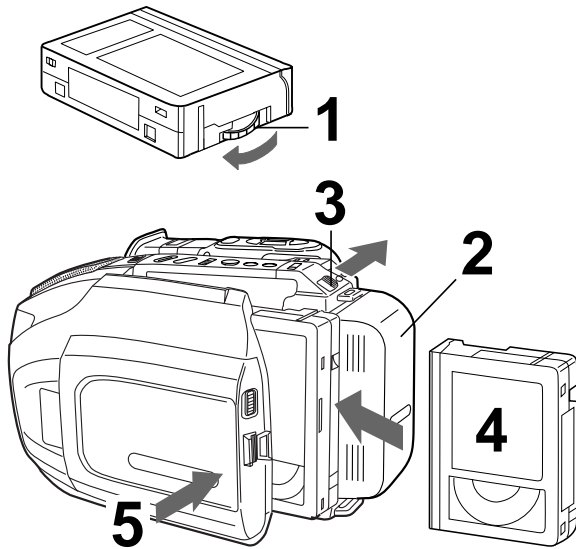
- If Car Battery cord fuse needs replacing, use exact current rating (in amps).

Note:

- This cord only works in vehicles equipped with **DC 12 V (negative ground)** battery. Check with your car/truck dealer. Use only specified car battery cord.
- To avoid blowing the car battery cord fuse, do step 2 in the proper order.
- Running vehicles must be well ventilated.
- When not in use, disconnect cigarette lighter plug.

Cassette Information

Cassette Insertion/Removal



1 Turn Tape Wheel in direction of arrow until there is no slack.

2 Attach Battery (page 9).

3 Slide TAPE EJECT to open door.

4 Insert cassette as shown.

5 Press here to close door.

• To remove the cassette, slide the TAPE EJECT switch.

Record/Playback Time

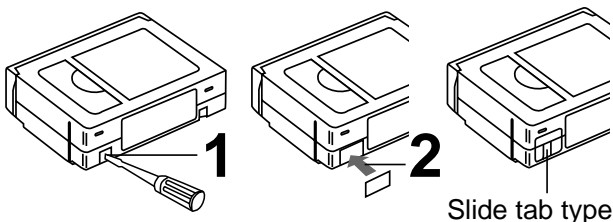
Use tapes with the **VHS** mark in this unit.

Tape Speed Selector Position	Cassette type		
	TC-20	TC-30	TC-40
SP (Standard Play)	20 minutes	30 minutes	40 minutes
SLP (Super Long Play)	1 hour	1 hour 30 minutes	2 hours

• SLP playback may contain more picture noise.

Erase Protection Tab

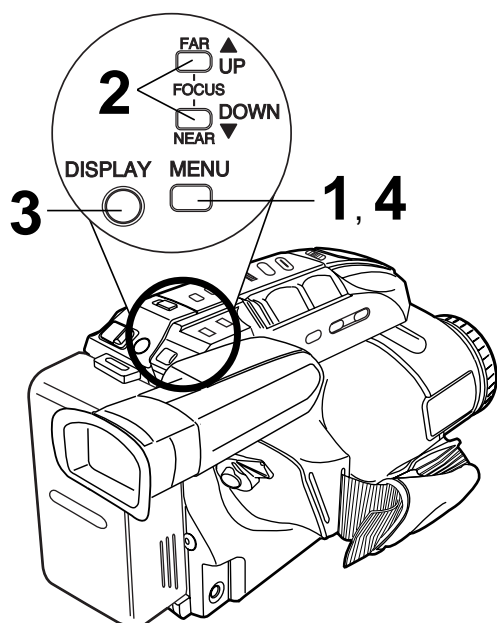
Protects tapes from being accidentally erased.



1 To prevent accidental erasing, break off tab with screwdriver. (Or, slide tab open.)

2 To record again, cover hole with adhesive tape. (Or, slide tab closed.)

Using MENU Mode



Before you begin...

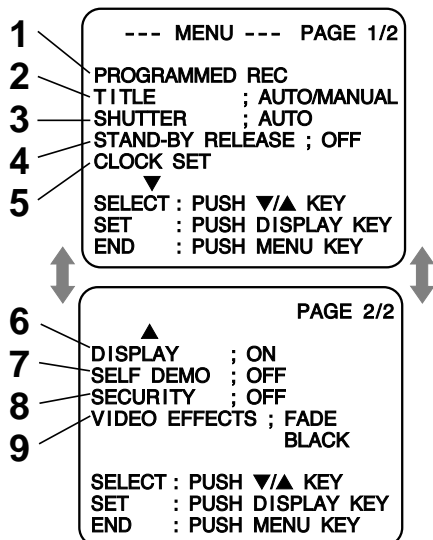
- Connect Camcorder to power source.
- Set POWER to CAMERA or VCR.

- 1 Press MENU for MENU mode.**
The CAMERA or VCR MENU screen (see below left) appears when Menu mode is entered.
- 2 Press UP ▲ or DOWN ▼ to highlight the desired menu item.**
- 3 Press DISPLAY to set selection.**
- 4 Press MENU to exit.**

Note:

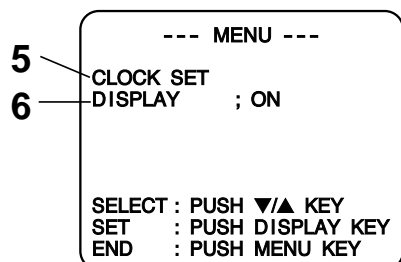
- The Menu mode is canceled if UP/DOWN(▲/▼), DISPLAY, or MENU are not pressed within 5 minutes when Self Demo mode is off.
- The Menu mode is canceled if UP/DOWN(▲/▼), DISPLAY, or MENU are not pressed within 30 seconds when Self Demo mode is on.

MENU Mode (CAMERA) Screen



- 1 PROGRAMMED REC** (page 18).
Camcorder starts and stops recording at a preset time.
- 2 TITLE** (pages 32, 33).
AUTO/MANUAL : 16 items
PHRASE : 10 items
- 3 SHUTTER** (page 25).
Select desired shutter speed.
- 4 STAND-BY RELEASE** (page 17).
ON: Enables quick resumption of recording from Stand-by mode.
- 5 CLOCK SET** (pages 13, 14).
Select to set clock.
- 6 DISPLAY** (page 47).
ON: On-screen Display (OSD) screens are displayed.
- 7 SELF DEMO** (page 7).
ON: SELF DEMO screen is displayed.
- 8 SECURITY** (page 31).
ON: Enables Motion Security recording.
- 9 VIDEO EFFECTS** (pages 26~28).
AUTO FADE : BLACK or WHITE
DIGITAL FADE : TYPE → 7 types
COLOR → 8 colors
DIGITAL FILTER : COLOR → 5 colors

MENU Mode (VCR) Screen

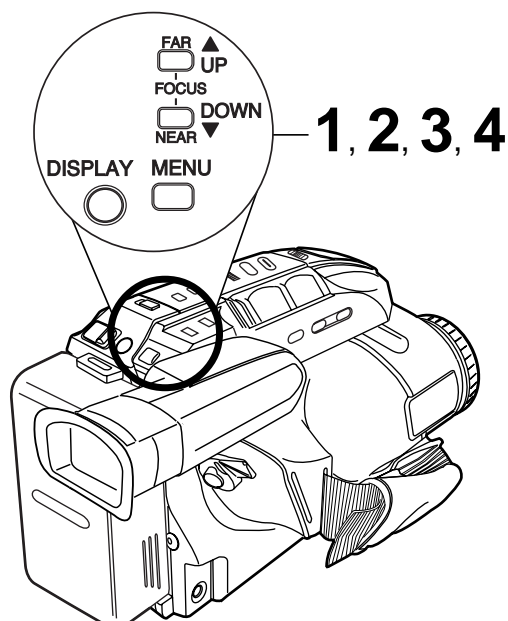


Setting the Clock

Set the following items in order: Time Zone, Daylight Saving Time, Date, and Time.

Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA or VCR.



- 1 Press **MENU** for MENU mode.
Press **UP ▲** or **DOWN ▼** to select **CLOCK SET**.

```

--- MENU --- PAGE 1/2
PROGRAMMED REC
TITLE      : AUTOMANUAL
SHUTTER    : AUTO
STAND-BY RELEASE : OFF
CLOCK SET
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
END    : PUSH MENU KEY
    
```

[CAMERA MODE]

```

--- MENU ---
CLOCK SET
DISPLAY : ON
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
END    : PUSH MENU KEY
    
```

[VCR MODE]

- 2 Press **DISPLAY** for **CLOCK SET** menu.
Press **UP ▲** or **DOWN ▼** to select **TIME ZONE**, **DST**, or **DATE/TIME**.

```

--- CLOCK SET ---
TIME ZONE : EASTERN
D. S. T.   : AUTO
DATE / TIME : 12 : 00 : 00AM
              JAN 1 2001
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
END    : PUSH MENU KEY
    
```

- 3 Press **DISPLAY** for menu of item selected in step 2.

To change the setting:

TIME ZONE → Go to step 3a on page 14.

D.S.T. → Go to step 3b on page 14.

DATE/TIME → Go to step 3c on page 14.

- 4 Press **MENU** twice to exit.

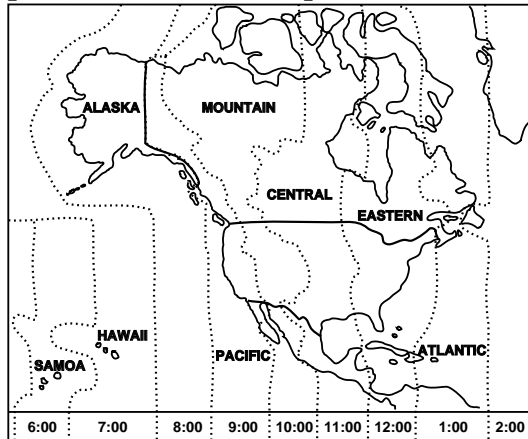
(continued on next page)

Setting the Clock (continued)

3a Setting the Time Zone

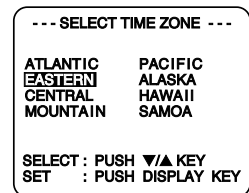
The Camcorder is preset to Eastern time.

[Time Zone chart]



Press **UP ▲** or **DOWN ▼** to select local time zone.

Press **DISPLAY** to confirm entry.



- When traveling, repeat this operation and select one of the 8 listed time zones to set the clock to local time.

Note :

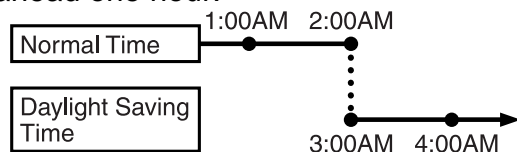
- Clock may lose or gain up to 2 minutes per month.
- When traveling outside the listed time zones, set clock to local time manually.
- To adjust or set clock, see "Setting Date and Time" bottom of page.

3b Auto Daylight Saving Time

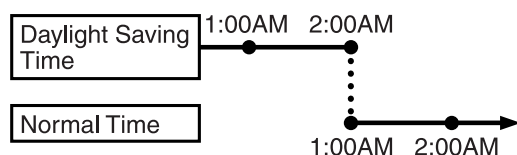
Clock will auto-adjust to daylight saving time (DST).

DST: AUTO

Spring (First Sunday in April) :
ahead one hour.



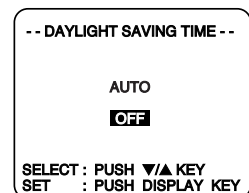
Autumn (Last Sunday in October) :
back one hour.



The Camcorder is preset to DST: **AUTO**. If DST is not observed in your area, set to **OFF** by doing the following.

Press **UP ▲** or **DOWN ▼** to select OFF or AUTO.

Press **DISPLAY** to confirm entry.



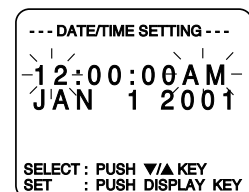
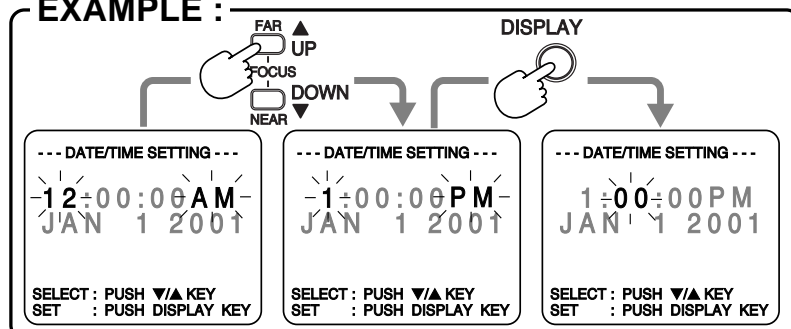
Note:

- Auto DST does not function if time zone is set to Hawaii or Samoa (see "Setting the Time Zone" above).

3c Setting Date and Time

Date and time including leap year are calculated up to DEC 31, 2099.

EXAMPLE :



Press or hold down **UP ▲** or **DOWN ▼** to select hour, then press **DISPLAY** to fix.

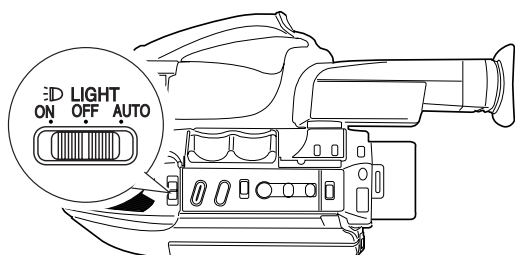
Repeat for minute, month, day, and year.

Clock starts when year is entered and **DISPLAY** is pressed.

Built-in Auto Light

Using the Light

For recording in dim lighting.



Note:

- Using Light reduces battery operating time.
- Provide proper ventilation when using Light extensively in a hot environment.
- Using Light when the Camcorder is powered by a car battery may shorten bulb life.
- Set Light to OFF when not in use.

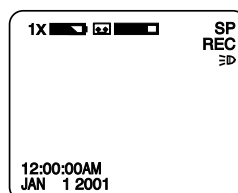
Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

Set LIGHT to AUTO.

Light turns on/off automatically according to lighting conditions.

Or, set **LIGHT to ON/OFF** manually.

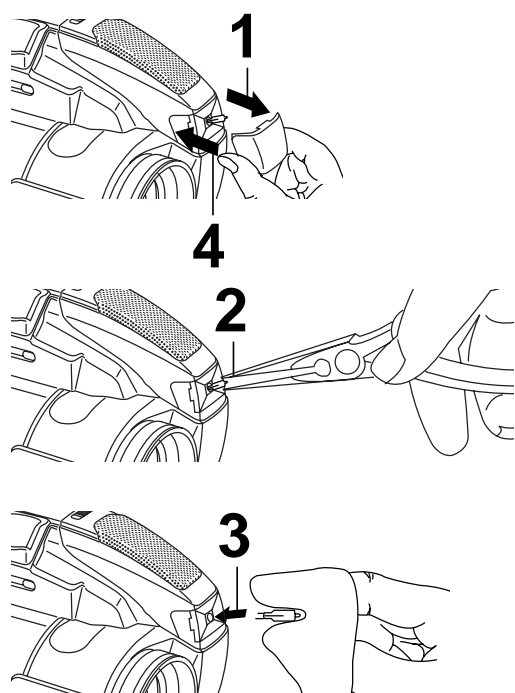


SP REC appears in EVF or LCD monitor when Light is on.

Caution:

Light becomes hot. Never cover Light while on.

Replacing the Bulb



Before you begin...

- Order Part No. VULS0001 (VLLW0015 and cushions) for replacement bulb unit.
- Set POWER to OFF.

1

Press in on both sides of lens cover and pull straight out and off.

2

Using Tweezers or needle-nose pliers, carefully remove bulb.

- Take unit to service center if you need assistance.

3

Replace bulb using a clean cloth or tissue. (Do not touch with fingers.)

4

Replace lens cover.

Note:

- Handle bulb gently. Excessive force may cause bulb to crack.

DANGER:

Use only replacement bulb (PART NO. VLLW0015) supplied by Panasonic to reduce risk of fire.

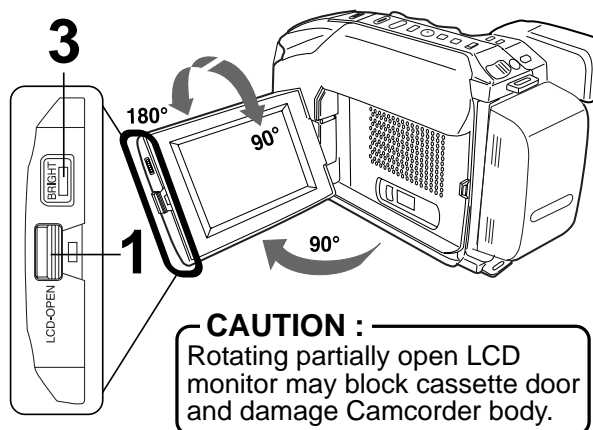
Handle new bulb with cloth or tissue as skin oils will decrease bulb life.

Remove lens cover and allow bulb to cool before replacing to avoid possible burn hazard.

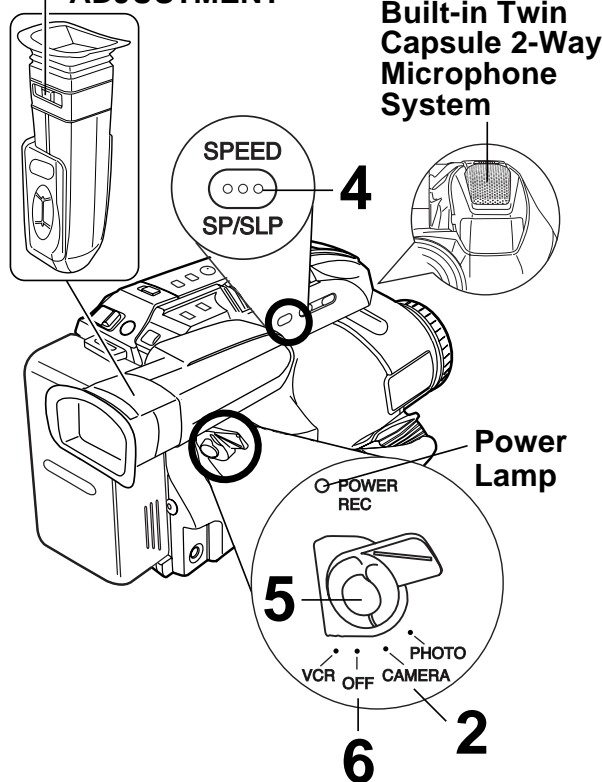
Camera Recording

Recording via EVF or LCD Monitor

View recording scene on EVF or LCD (Liquid Crystal Display) monitor.



3 VISION ADJUSTMENT



Note:

- When Camcorder is aimed at excessively bright objects, or bright lights, a vertical bar may appear in the picture. This is normal for the CCD pick-up. Try to avoid this when possible.
- Using LCD monitor reduces battery operation time. Return LCD monitor to locked position when not in use.

Before you begin...

- Connect Camcorder to power source.
- Insert cassette with record tab (page 11).

1

Press **LCD-OPEN** to unlock the LCD monitor. **Swing LCD monitor fully open and adjust viewing angle.**

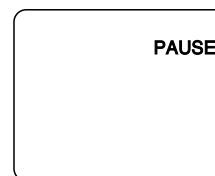
- If you want to record using EVF, close and lock LCD monitor.

2

Set **POWER** to **CAMERA**.

Lens Cover opens.
Power Lamp lights.

- Be sure **POWER** is fully turned to **CAMERA** position.
- EVF or LCD monitor turns on/off by the **POWER** switch.
- EVF shuts off when LCD monitor is opened and turns back on when LCD is closed.
- Both EVF and LCD monitor turn on when LCD is at 180° (see above left). This allows both you and the subject to view the recording.



EVF or LCD Monitor
(Record/Pause mode)

3

LCD monitor : Turn **BRIGHT** control to adjust LCD monitor brightness level.

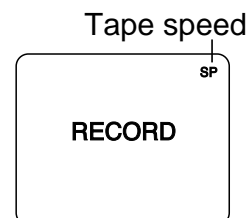
EVF : Look into **EVF** and adjust **VISION ADJUSTMENT** to your eyesight.

4

Hold down **TAPE SPEED** for about 1 second to change tape speed to **SP/SLP** (page 11).

5

Press **RECORD/PAUSE** to start or pause recording.



6

Set **POWER** to **OFF** when finished.

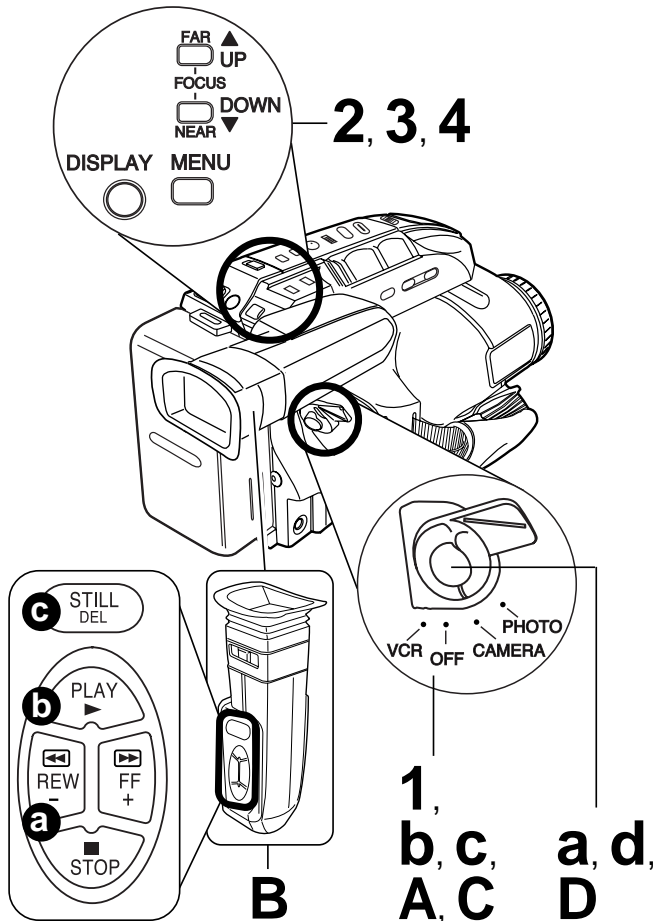
EVF or LCD Monitor
(Record mode)

- To remove the cassette, slide the **TAPE EJECT** switch (page 11).

Camera Recording

Before you begin...

- Connect Camcorder to power source.
- Insert cassette with record tab (page 11).



Stand-by Quick Release

If left in RECORD/PAUSE mode for 5 minutes, Camcorder switches to Stand-by mode to conserve battery. When set to ON, Stand-by Quick Release lets you resume recording by pressing RECORD/PAUSE two times. Stand-by Quick Release is set to OFF at the factory.

- 1 Set **POWER** to **CAMERA**.
- 2 Press **MENU** for **MENU mode**. Press **UP ▲** or **DOWN ▼** to select **STAND-BY RELEASE**.

--- MENU --- PAGE 1/2
PROGRAMMED REC
TITLE : AUTO/MANUAL
SHUTTER : AUTO
STAND-BY RELEASE : OFF
CLOCK SET
SELECT : PUSH ▼/▲ KEY
SET : PUSH DISPLAY KEY
END : PUSH MENU KEY
- 3 Press **DISPLAY** to select ON/OFF.
ON : From Stand-by mode, press **RECORD/PAUSE** two times to resume recording.
OFF : From Stand-by mode, set **POWER** to **OFF**, then to **CAMERA**. Press **RECORD/PAUSE** to record.
- 4 Press **MENU** to exit.

Manual Easy Editing

For proper continuity when taping from Stop mode or after attaching a new Battery.

- A** Set **POWER** to **VCR**.
- B** **a** Press **REWIND/SEARCH** to rewind a few seconds of tape.
b Press **PLAY** to review recording.
c Press **STILL** where you want to continue recording.
- C** Set **POWER** to **CAMERA**.
- D** Press **RECORD/PAUSE** to resume recording.

Easy Edit Stand-by

For a smooth transition between scenes if recording is stopped, and then started within 24 hours.

- a** Press **RECORD/PAUSE** to stop recording.
- b** Set **POWER** to **OFF** and leave cassette in Camcorder.
- c** To resume recording, set **POWER** to **CAMERA**.
- d** Press **RECORD/PAUSE** to resume recording.

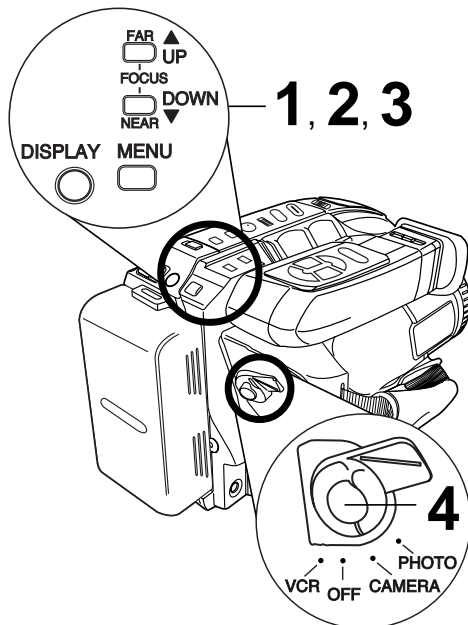
Note:

- Use Manual Easy Edit (left) if more than 24 hours before recording is resumed.

Camera Recording

Programmed Recording

Set a recording start and stop time. Or, set a 5 or 10 second interval recording to be done each minute.



REC TIME :

→ 10MIN. → 20MIN. → 30MIN. →
 INTERVAL*2 ← INTERVAL*1 ← TO TAPE
 10 SEC/MIN. ← 5 SEC/MIN. ← END

*1 Record 5 seconds each minute.

*2 Record 10 seconds each minute.

Before you begin...

- Connect Camcorder to power source.
Use AC Adaptor for longer recordings.
- Insert cassette with record tab (page 11).
- Set **POWER** to **CAMERA**.

1 Press **MENU** for **MENU** mode. Press **UP ▲** or **DOWN ▼** to select **PROGRAMMED REC.**

```

--- MENU --- PAGE 1/2
PROGRAMMED REC
TITLE      : AUTO/MANUAL
SHUTTER    : AUTO
STAND-BY RELEASE : OFF
CLOCK SET
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
END    : PUSH MENU KEY
  
```

2 Press **DISPLAY**.
 (Current time is displayed.)
 Each additional press of **DISPLAY** increases start time by 30 minutes.

```

START : 10:20PM
REC TIME : 10MIN.
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
START  : PUSH RECORD KEY
CANCEL: PUSH MENU KEY
10:20:00PM
  
```

3 Press **DOWN ▼** to select **REC TIME**. Press **DISPLAY** repeatedly to select one of the options shown at left.

```

START : 10:20PM
REC TIME : 10MIN.
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
START  : PUSH RECORD KEY
CANCEL: PUSH MENU KEY
10:20:00PM
  
```

To cancel the setup, press **MENU** twice.

4 Press **RECORD/PAUSE** to place Camcorder in stand-by mode.

```

STAND-BY
START : 10:20PM
REC TIME : 10MIN.
10:20:00PM
JUN 1 2001
  
```

Recording will be done as scheduled.

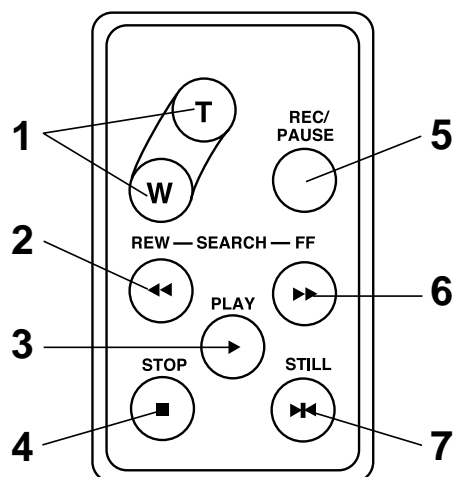
Note:

- Start time may not be set over 24 hours from current time.
- Camcorder shuts off at tape end, or 12 hours after Interval Recording starts.
- To cancel, set **POWER** to **OFF**.

8-Function Remote Control

Remote Control Operation

Operate Camcorder's main functions up to about 5 m (16 feet) away.
Aim remote at sensor on Camcorder.



Controlled Functions

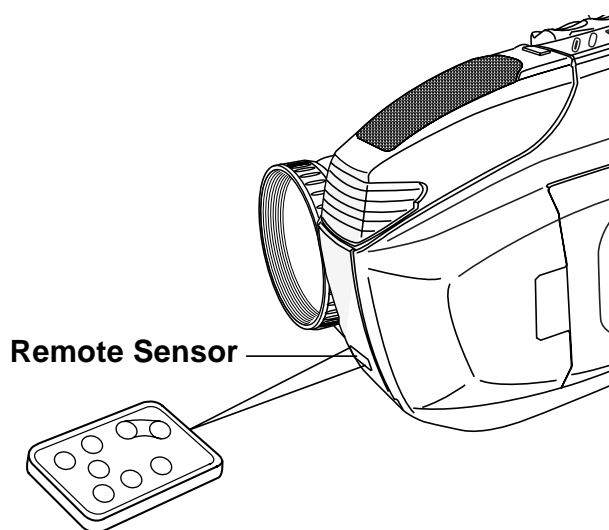
- 1 POWER ZOOM**
page 23.
- 2 REWIND/SEARCH**
page 20.
- 3 PLAY**
page 20.
- 4 STOP**
page 20.
- 5 RECORD/PAUSE**
page 16.
- 6 FAST FORWARD/SEARCH**
page 20.
- 7 STILL**
page 20.

Note:

- If you press REC/PAUSE on the remote control with the LCD monitor rotated 180° to face the same direction as the lens/subject, "RECORD" or "PAUSE" is displayed on-screen in extra large characters for confirmation.

Important Note:

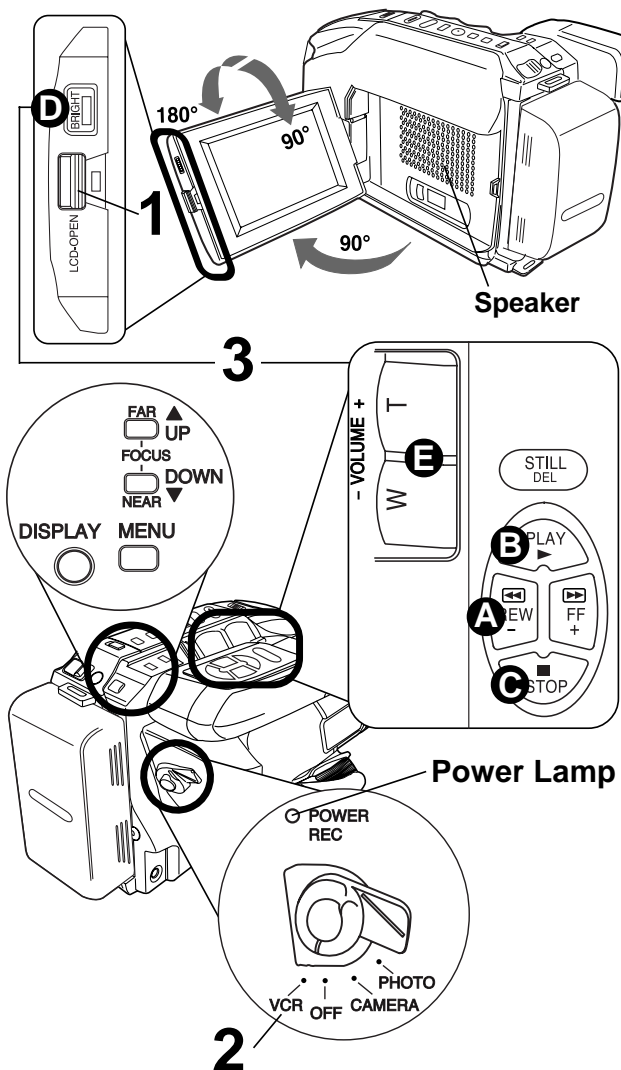
- After 5 minutes in Record/Pause mode, the camcorder will shut off to conserve battery power. If recording is resumed within 30 minutes, press REC/PAUSE once.
If over 30 minutes, set POWER to OFF, then CAMERA, then press REC/PAUSE.



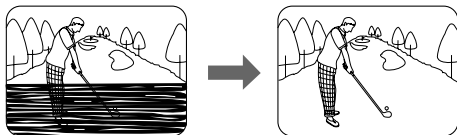
Playing Back Recordings

Before you begin...

- Connect Camcorder to power source.
- Insert recorded tape.



Tracking Control



Auto Tracking

Continuously analyzes each recording for optimum picture quality.

Manual Tracking

Some recordings require manual adjustment to reduce noise.

Press **UP ▲** or **DOWN ▼** until Playback picture clears up.

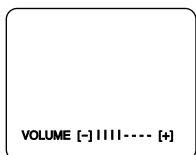
Press **DISPLAY** to return to Auto Tracking.

Playback on EVF or LCD Monitor

- 1 Press **LCD-OPEN** and swing LCD monitor fully open.
 - If you want to playback on EVF, close and lock LCD monitor.

- 2 Set **POWER** to **VCR**. Power Lamp lights.
 - If tape has no record tab, auto playback begins.
 - EVF or LCD monitor turns on/off by the POWER switch.
 - EVF shuts off when LCD monitor is opened and turns back on when LCD is closed.

- 3 Playback function buttons.
 - A REW** : Rewind tape.
 - B PLAY** : Play tape.
 - C STOP** : Stop tape.
 - D BRIGHT** : Adjust LCD monitor brightness.
 - E VOLUME** : Adjust volume of speaker.
 - Press "T": Volume up (+).
 - Press "W": Volume down (-).



Note:

- Using LCD monitor reduces battery operating time. Return LCD monitor to locked position when not in use.

Special Effects

Quick Visual Search

Search Speed

- SP (Standard Play) : 3 times normal.
- SLP (Super Long Play) : 9 times normal.

During playback, press:

- **FF** : fast forward search
 - **REW** : rewind search
- Press again or press **PLAY** for normal play.

Still Picture

Press **STILL** to freeze picture.

Press **again** for normal play.

This feature works best in SLP mode (page 11).

Note:

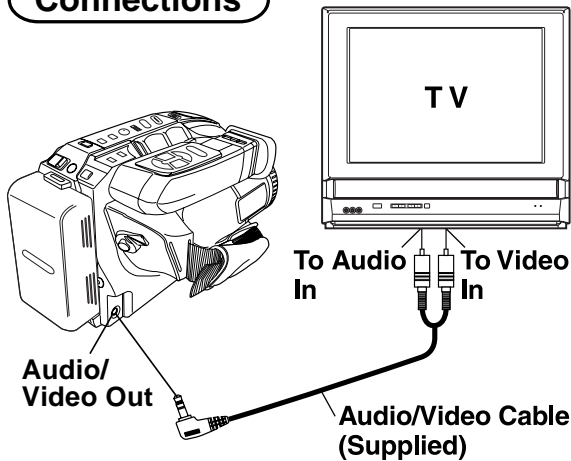
- During search, horizontal noise bars will appear. Audio is muted.
- To protect video heads and tape, operating modes will revert as follows after 5 minutes:
 - Still → Stand-by
 - Stand-by → Power off (when Battery Pack is used).
- Tape auto-rewinds if played or fast forwarded to end.

Playing Back Recordings

TV Playback or Viewing

Connect Camcorder to a TV to view playback or recordings in progress.

Connections



Before you begin...

- Connect Camcorder to power source.
- Make all TV-Camcorder connections.

- 1** Set **POWER** to:
VCR → view playback.
CAMERA → view picture as it is recorded.
- 2** Turn **TV ON** and set to **LINE INPUT**. See TV owner's manual.
- 3** Begin playback or recording.

CATV System Installer

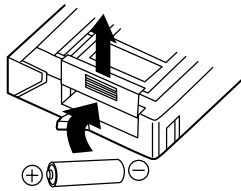
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC in USA (and to the Canadian Electrical Code in Canada) that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

VCR Playback using PlayPak

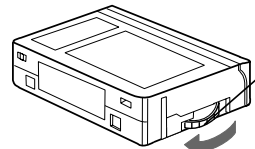
1 Load Battery in PlayPak

Remove Battery lid and insert AA battery.

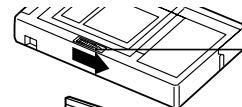
- Do not reverse polarity.
- Replace battery when tape loading/unloading takes longer than usual.



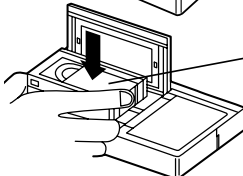
2 Insert VHS Cassette in PlayPak



a Turn **VHS** cassette **Tape Wheel** in direction of arrow to take up any slack.

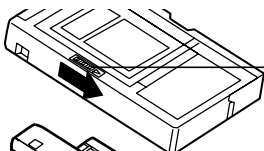


b Slide **RELEASE** to open cassette lid.

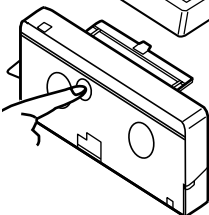


c Insert the **VHS** cassette with the window up and on the left, then snap lid shut.

3 Remove VHS Cassette

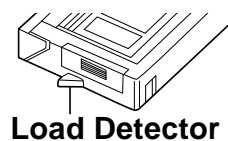


a Slide **RELEASE** and wait for lid to open.

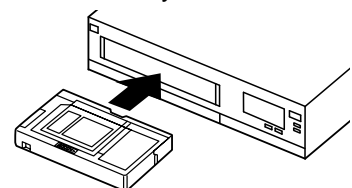


b Push cassette out through hole in bottom of PlayPak with your finger.

- Do not obstruct cassette reel while loading.
- Allow PlayPak Load Detector to fully retract before using in VHS VCR.

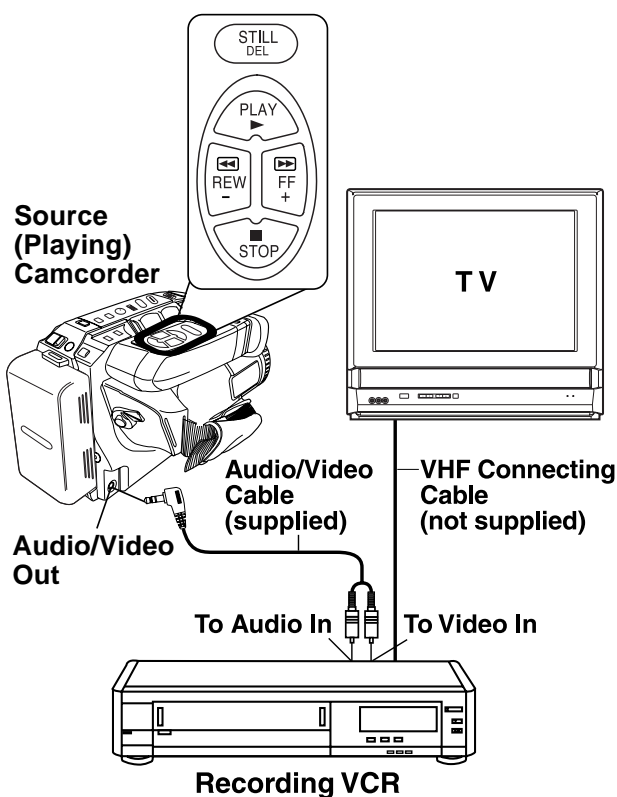


Load Detector



Copying your Tapes (dubbing)

Connections



Monitor with your TV

- Turn TV on and tune to VCR channel (CH3 or CH4).
- Set TV/VCR Selector on VCR to VCR.

Before you begin...

- Make Camcorder-VCR connections (see left).
- Turn both units on.
- Set VCR input signal to LINE.
Please see VCR owner's manual.
- Set Camcorder POWER to VCR.

- 1** Insert a pre-recorded tape into Camcorder and a blank tape with record tab into VCR.
- 2** Press PLAY on Camcorder, then press STILL at starting point.
- 3** Press REC, then STILL/PAUSE on VCR.
- 4** Press STILL on Camcorder and STILL/PAUSE on VCR to start copying.
- 5** Press STOP on both units to stop copying.

Note:

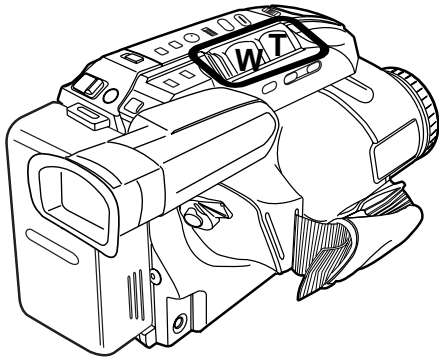
- Camcorder will only playback tapes recorded in SP or SLP mode.
- Dubbing may reduce picture quality.

CAUTION:

Unauthorized exchanging and/or copying of copyrighted recordings may be copyright infringement.

Four-Speed Power Zoom

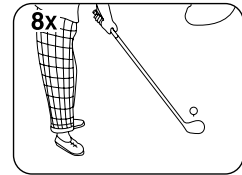
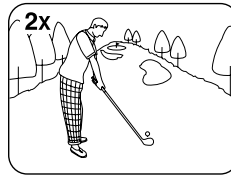
Zoom in (close up) and out (wide angle) in one of four speeds ranging from slow (16 seconds) to fast (2 seconds).



Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

Zoom In ("T")



Zoom Out ("W")

• Zoom slowly:

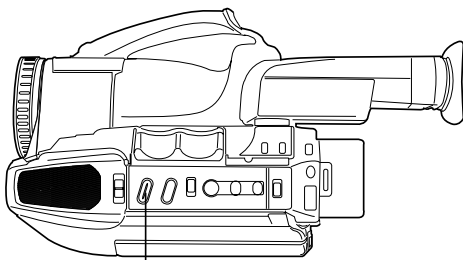
Lightly press "T" (telephoto) or "W" (wide angle) POWER ZOOM button.

• Zoom quickly:

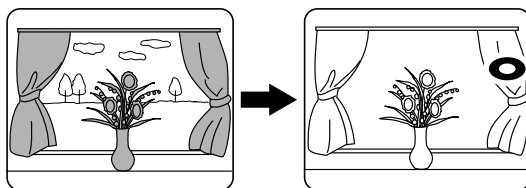
Apply more pressure to the button.

Backlight

Use when subject is darker than surroundings, in shadowed area, or in front of the light source.



BACKLIGHT



Press BACKLIGHT.

Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

Press **BACKLIGHT** while recording to select the level of backlight compensation.

In normal lighting, press **BACKLIGHT** repeatedly until no indicator is displayed.

EVF or LCD Monitor

→ Normal (No Indication)

● First press (Low)

○ Second press (Medium)

○ Third press (High)

Fourth press

Focus

Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

Auto Focus

Camcorder automatically focuses on subject even during zooming.

Auto Focus is on when "MF" is not displayed in EVF or LCD monitor.

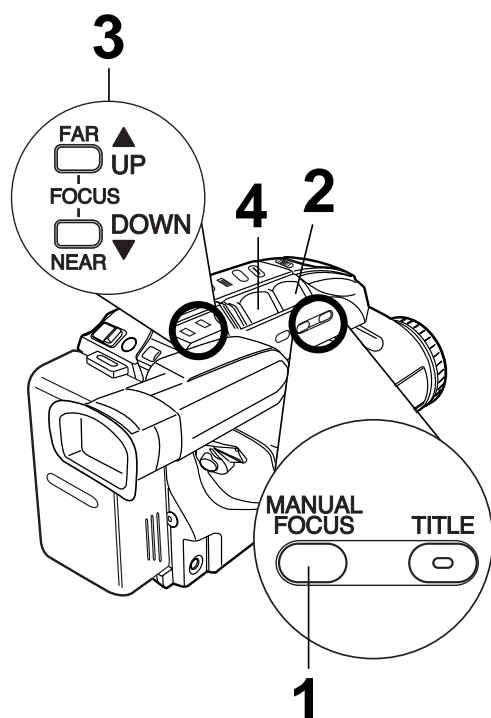
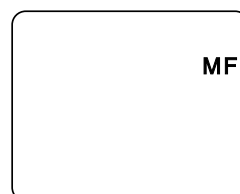
Press **MANUAL FOCUS** to remove "MF" in EVF or LCD monitor if necessary.

Manual Focus

Use Manual Focus (MF) when :

- recording through glass.
- lighting is poor.
- subject is far away with objects in foreground.
- subject has distinct horizontal lines.
- subject is not centered in EVF or LCD monitor.
- subject has a shiny surface.
- subject is slanted.
- subject is bright and flat, like a white wall.
- subject has fast motion, like a golf swing.

EVF or LCD Monitor



1 Press **MANUAL FOCUS** so "MF" (Manual Focus) appears in EVF or LCD monitor.

2 Hold down **"T" (telephoto)** on **POWER ZOOM** to maximum zoom in.

3 Press **UP ▲ (FAR)** or **DOWN ▼ (NEAR)** until subject is in focus.
• Back away from subject if necessary.

4 Hold down **"W" (wide angle)** on **POWER ZOOM** as desired.

- **Refocus as needed** when aiming at new scenes.

Macro Focus (close-ups)

Auto Focus functions up to 12.7 mm (1/2 inch) from subject.

Hold down **"W"** on **POWER ZOOM** to maximum wide angle.

Bring Camcorder up close to the subject.

High Speed Shutter

Improves Still or Slow Motion playback picture of high speed subjects (e.g. a tennis stroke), when viewed on Camcorder or 3 or 4 head VCR.

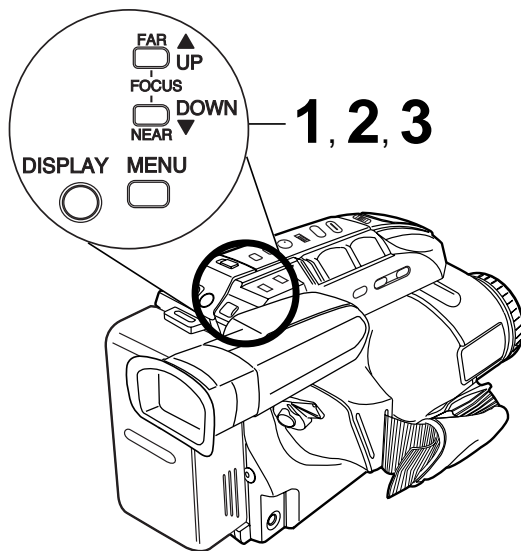
Auto Shutter

In AUTO mode (no indication in EVF or LCD Monitor), shutter speed is auto-adjusted from 1/60 to 1/350 according to subject brightness.

- AUTO mode is selected each time POWER is set to CAMERA.

Manual Selection

The faster the shutter speed, the more light is needed for proper picture and color quality. High Speed Shutter indication flashes if light is inadequate. Provide additional light.



1 Press MENU for MENU mode.
Press UP ▲ or DOWN ▼ to select **SHUTTER**.

2 Press DISPLAY repeatedly to select shutter speed.

```
--- MENU --- PAGE 1/2
PROGRAMMED REC
TITLE       : AUTO/MANUAL
SHUTTER     : AUTO
STAND-BY RELEASE : OFF
CLOCK SET
SELECT : PUSH ▼/▲ KEY
SET    : PUSH DISPLAY KEY
END    : PUSH MENU KEY
```

AUTO → 1/60 → 1/100 → 1/250 → 1/500
1/10000 ← 1/4000 ← 1/2000 ← 1/1000

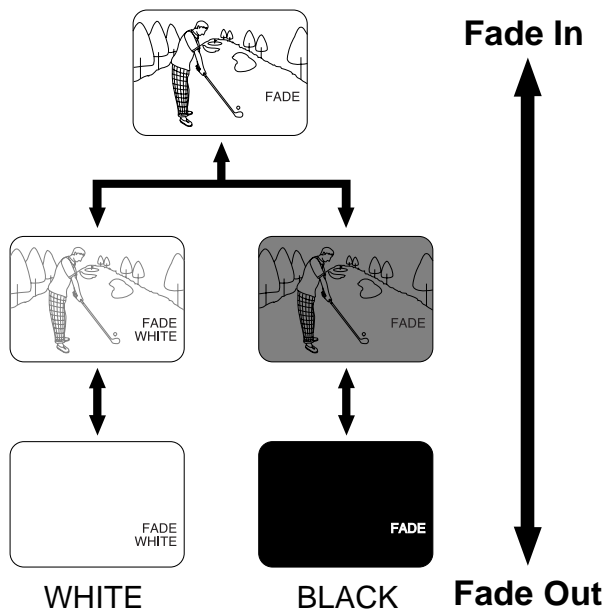
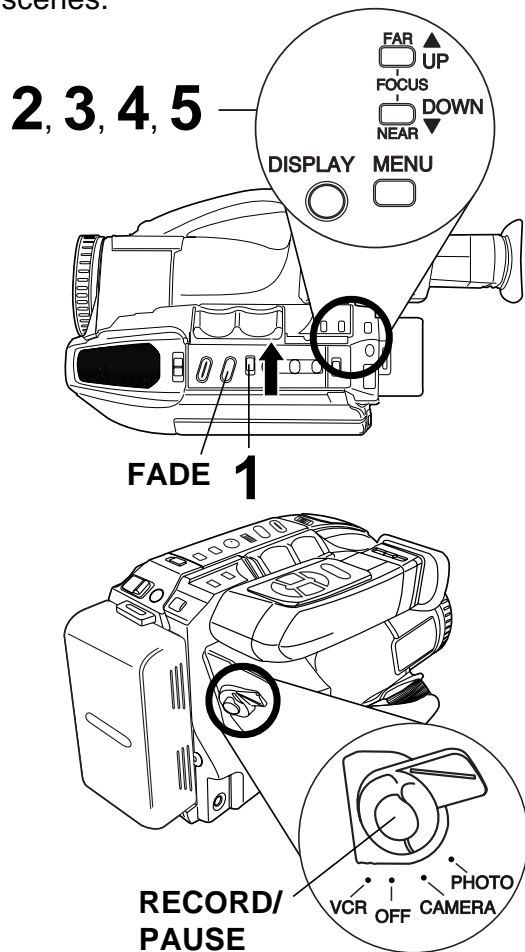
3 Press MENU to exit.

Note:

- Provide additional halogen or tungsten light for use indoors or in poor light. Fluorescent light degrades picture.
- Auto Focus may not function properly if high speed shutter is used in inadequate light.
- Setting reverts to AUTO each time POWER is set to CAMERA.

Auto Fade

An interesting way to open and close scenes.



Note:

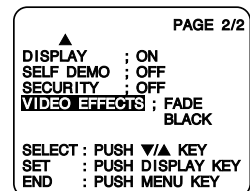
- Auto Fade will not function during Digital Wipe mode or Picture in Picture Wipe Title.

Before you begin...

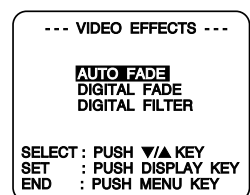
- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide **DIGITAL SELECT** to **FADE**.

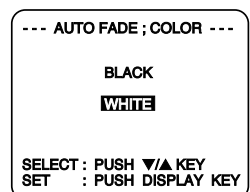
2 Press **MENU** for **MENU** mode.
Press **UP ▲** or **DOWN ▼** to select **VIDEO EFFECTS**.



3 Press **DISPLAY** for **VIDEO EFFECTS** menu.
Press **UP ▲** or **DOWN ▼** to select **AUTO FADE**.



4 Press **DISPLAY** for **AUTO FADE ; COLOR** menu.
Press **UP ▲** or **DOWN ▼** to select **BLACK** or **WHITE**.



5 Press **DISPLAY** to confirm entry.
Press **MENU** to exit.

Fade In:

In **RECORD/PAUSE** mode, press **FADE** so "FADE" flashes in EVF or LCD monitor.

Press **RECORD/PAUSE**.

Recording starts as picture and sound gradually fade in.

Fade Out:

While recording, press **FADE** so "FADE" flashes in EVF or LCD monitor.

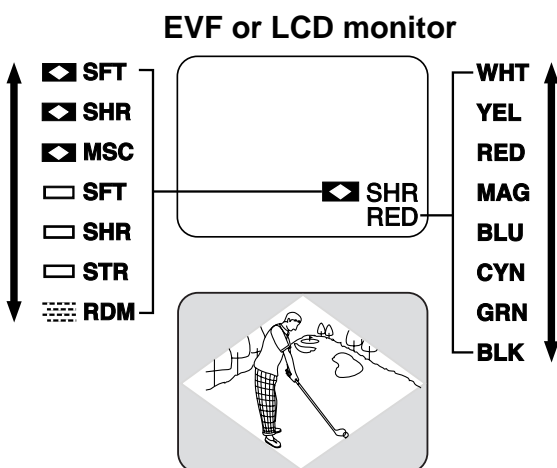
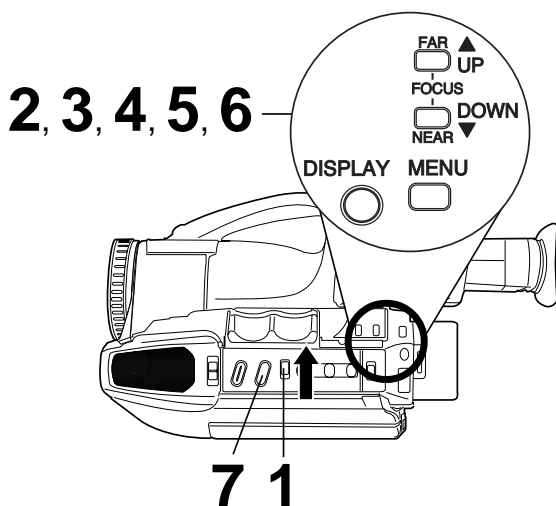
Press **RECORD/PAUSE**.

Picture and sound gradually fade out, and recording is paused.

If **FADE** is pressed accidentally, press again so "FADE" disappears in EVF or LCD monitor.

Color Digital Fade

Choose from 7 fade effects in 8 different colors.



■ For more effects, stop fade in or fade out at any time (except RANDOM mode) by pressing **FADE**. Then, press **FADE** to resume fade.

Note:

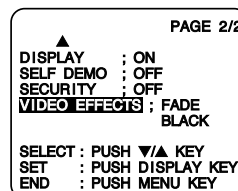
- Audio is not affected by fade.
- To cancel Digital Fade, do steps 1, 2, 3, and 6. In step 3, select AUTO FADE.
- Color Digital Fade will not function during Digital Wipe mode or Picture in Picture Wipe Title.

Before you begin...

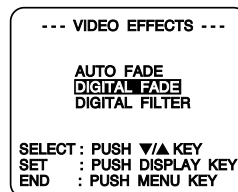
- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide **DIGITAL SELECT** to **FADE**.

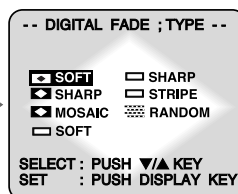
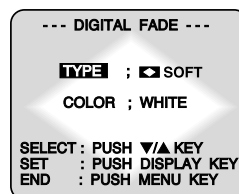
2 Press **MENU** for MENU mode. Press **UP ▲** or **DOWN ▼** to select **VIDEO EFFECTS**.



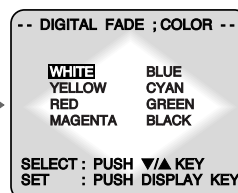
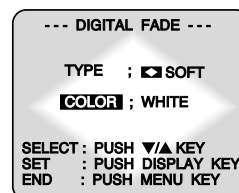
3 Press **DISPLAY** for VIDEO EFFECTS menu. Press **DOWN ▼** to select **DIGITAL FADE**.



4 Press **DISPLAY** for DIGITAL FADE menu. Press **UP ▲** or **DOWN ▼** to select **TYPE**. Press **DISPLAY** for TYPE menu. Press **UP ▲** or **DOWN ▼** to select from 7 different types of fades. A preview of each fade type is displayed as it is selected.



5 Press **DISPLAY** for DIGITAL FADE menu. Press **DOWN ▼** to select **COLOR**. Press **DISPLAY** for COLOR menu. Press **UP ▲** or **DOWN ▼** to select from 8 colors. A preview of each color is displayed as it is selected.

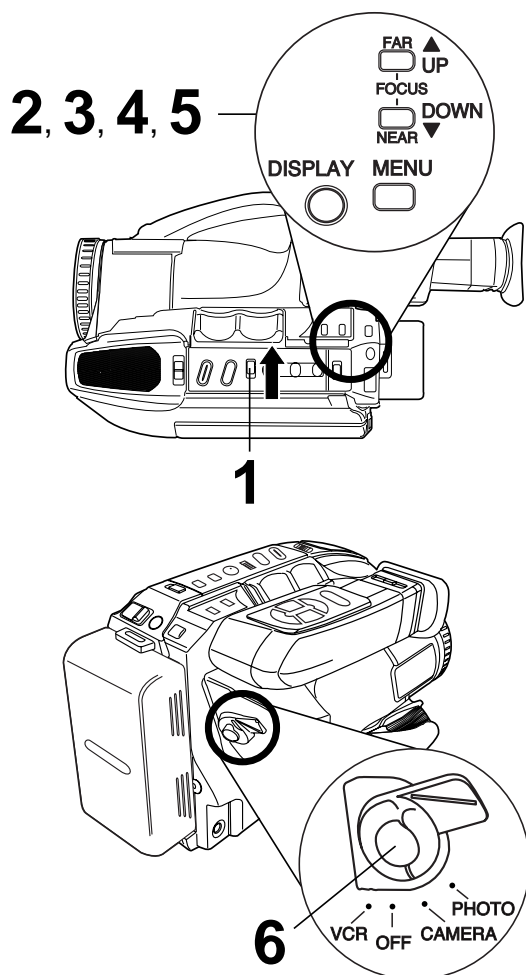


6 Press **DISPLAY** to confirm entry. Press **MENU** twice to exit.

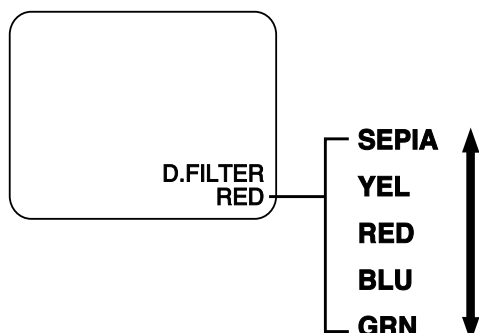
7 Press **FADE** for about 2 seconds to fade out during recording (selected fade type flashes). Press **FADE** again to fade in.

Color Digital Filter

Digital Filter adds one of 5 colors to entire picture, like a color filter.



EVF or LCD monitor

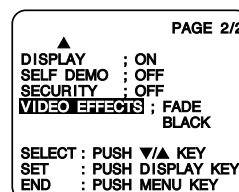


Before you begin...

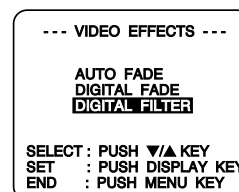
- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide DIGITAL SELECT to FADE.

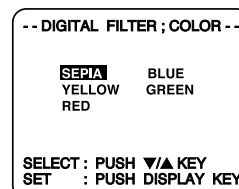
2 Press MENU for MENU mode.
Press UP ▲ or DOWN ▼ to select **VIDEO EFFECTS**.



3 Press DISPLAY for VIDEO EFFECTS menu.
Press DOWN ▼ to select **DIGITAL FILTER**.



4 Press DISPLAY for DIGITAL FILTER menu. Press UP ▲ or DOWN ▼ to select from 5 colors.
• A preview of each color is displayed as it is selected.



5 Press DISPLAY to confirm entry.
Press MENU to exit.

6 Start recording (page 16).

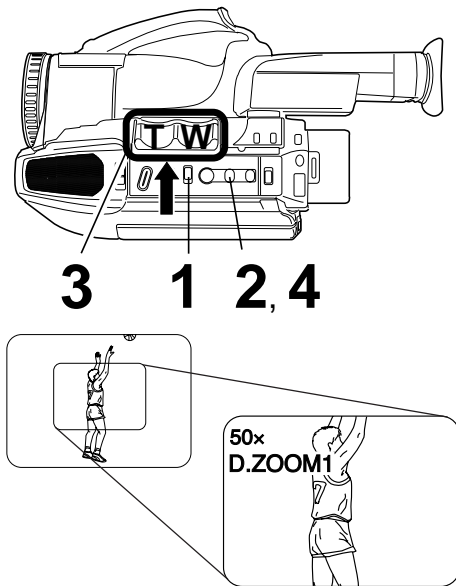
- To cancel Digital Filter, set **POWER** to **OFF**.

Note:

- Color Digital Filter will not function during Digital Wipe mode, Picture in Picture Wipe Title or Still/Strobe/Wide.
- Picture returns to normal in Still mode.

Digital Zoom

Power Zoom magnification is digitally increased.



Note:

- If "NOW IN DIGITAL WIPE" is displayed when D. ZOOM is pressed, DIGITAL SELECT is currently in DIGITAL WIPE mode and the DIGITAL ZOOM feature is not available.

Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide **DIGITAL SELECT** to **D.ZOOM**.

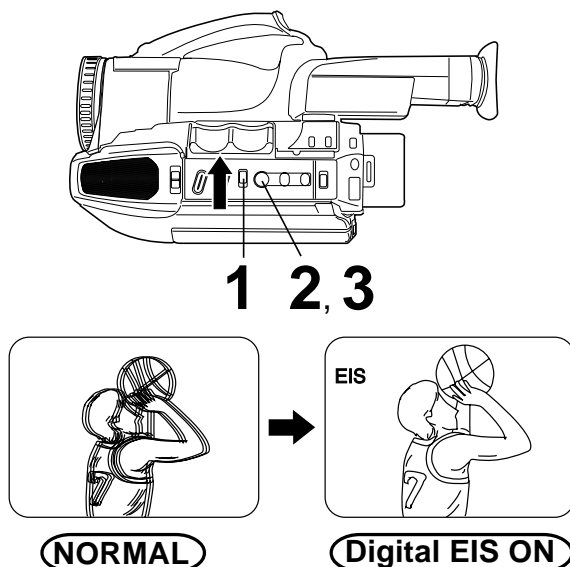
2 Press **D. ZOOM**.
once → D.ZOOM 1 (150× maximum)
twice → D.ZOOM 2 (300× maximum)
 The Higher digital magnification levels may cause picture distortion.

3 Hold down **"T" on POWER ZOOM**.
 Digital Zoom starts when normal zoom reaches maximum (26×).
 • Zoom level appears in EVF or LCD monitor.
 • POWER ZOOM switch controls digital zoom level.
 • Normal zoom resumes when level falls to 26×.

4 Press **D. ZOOM** to turn off Digital Zoom so no indication appears.

Digital Electronic Image Stabilization (E.I.S.)

Helps stabilize picture when recording in unstable situations.



Note:

- If "NOW IN DIGITAL WIPE" is displayed when EIS is pressed, DIGITAL SELECT is currently in DIGITAL WIPE mode and the Digital E.I.S. feature is not available.

Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide **DIGITAL SELECT** to **EIS**.

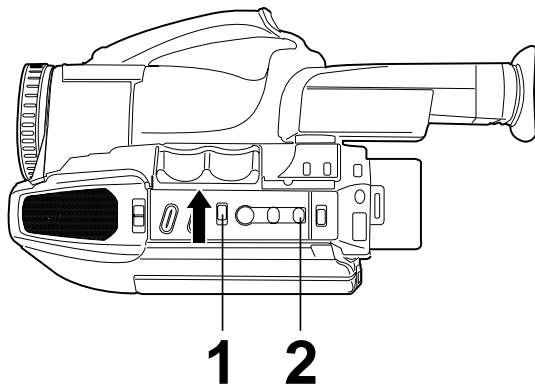
2 Press **EIS** to display "EIS" in the EVF or LCD monitor.
 • Image becomes slightly enlarged and shutter speed auto-adjusts from 1/80 to 1/350 according to brightness.
 • Use High Speed Shutter (page 25) if needed. Shutter speed setting remains after EIS is canceled.

3 Press **EIS** again to cancel when not in use.

E.I.S. may not function during...

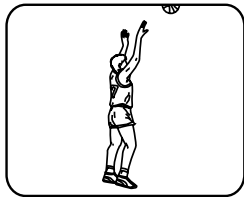
- extreme Camcorder movement.
- recording of subjects with distinct horizontal or vertical stripes.
- low light situations (EIS indicator flashes).
- intense fluorescent lighting situations.
- recording of very fast motion.

Still/ Strobe/ Wide

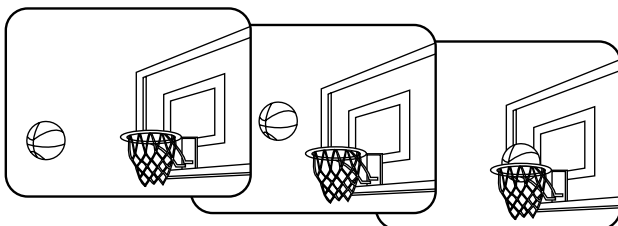


EVF or LCD monitor

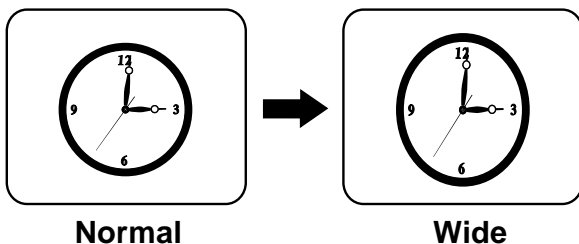
Still



Strobe



Wide Screen



Normal

Wide

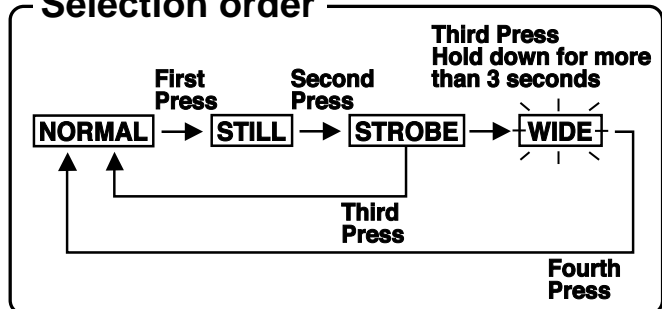
Before you begin...

- Connect Camcorder to power source.
- Set POWER to CAMERA.

1 Slide **DIGITAL SELECT** to **STILL/STROBE**.

2 Press **STILL/STROBE** repeatedly for desired function as described below.

Selection order



STILL

Records a still image from the current picture.

STROBE

Records a progression of still images in 1/6 of a sec. intervals.

WIDE SCREEN

Records a picture that will fill entire screen of a wide screen (16×9 aspect ratio) TV.

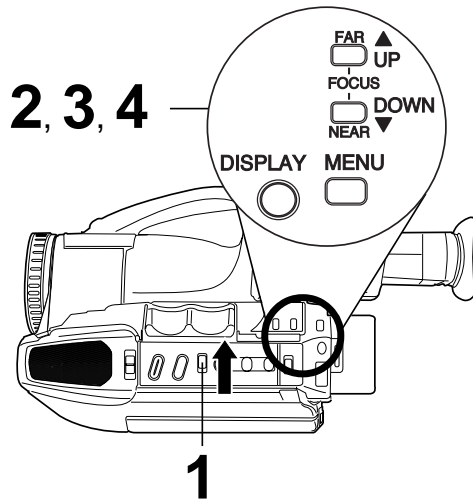
- Picture appears distorted in EVF or LCD monitor.

Note:

- If "NOW IN DIGITAL WIPE" is displayed when STILL/STROBE is pressed, DIGITAL SELECT is currently in DIGITAL WIPE mode and the STILL/STROBE/WIDE feature is not available.
- Wide screen recordings must be played back on a wide screen TV (16×9 aspect ratio) or picture will be distorted.
- If title is added (pages 32, 33) during Wide mode, it will be distorted when played back on a wide screen TV.

Security Mode

Recording starts automatically if motion is detected.



Motion Security may mistakenly start when:

- background is plain, like a white wall, or has distinct vertical, horizontal, or slanted stripes, like a venetian blind.
- brightness suddenly changes.

Motion Security may not start when:

- motion is very slow or fast.
- moving object is very small.
- motion occurs only in 1 corner of viewing area.
- in poor lighting (in this case, MOTION SECURITY flashes).
- background is plain, like a white wall, or has distinct horizontal or vertical stripes.

Note:

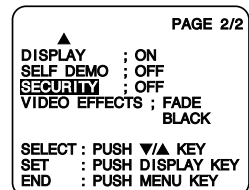
- Security recording starts if Camcorder is bumped or repositioned.
- This feature is not available during normal recording.
- While in Motion Security stand-by, the following functions are not available: Record/Pause, Stand-by mode, Digital E.I.S., Video Effects (Auto/Digital Fade, Digital Filter).

Before you begin...

- Connect Camcorder to power source.
Use AC Adaptor for longer recordings.
- Insert cassette with record tab (page 11).
- Set **POWER** to **CAMERA**.
- Securely position and aim Camcorder.

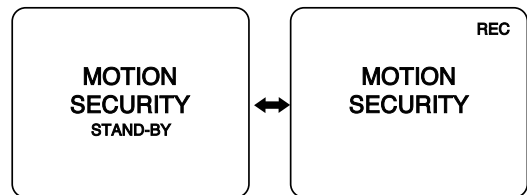
1 Slide **DIGITAL SELECT** to **EIS**.

2 Press **MENU** for **MENU** mode.
Press **UP ▲** or **DOWN ▼** to select **SECURITY**.



3 Press **DISPLAY** to select **ON**.

4 Press **MENU** for Motion Security stand-by mode. (If cassette is not inserted, "⏏" will flash.)



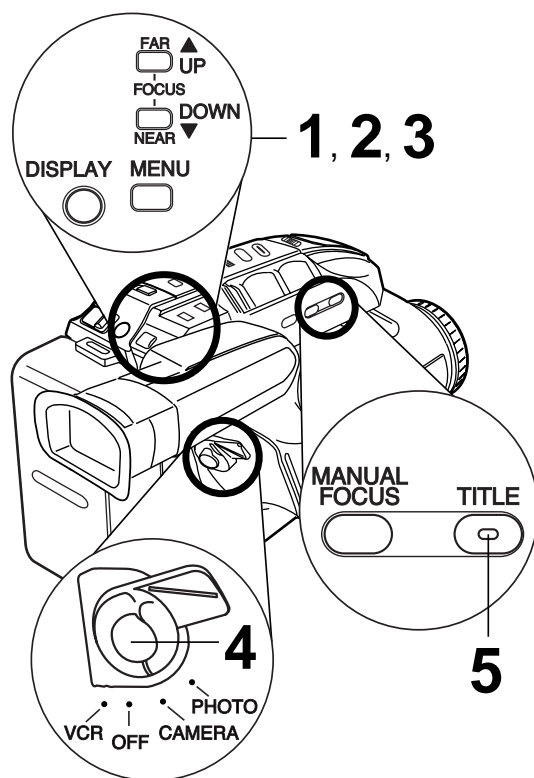
- Recording will start about 3 seconds after motion is detected.
- Date and time are recorded if displayed in EVF or LCD monitor (page 14).
- Recording stops about 30 seconds after motion ceases.

To cancel Security Mode, set **POWER** to **OFF**.

Intelligent Titler

Automatic Title

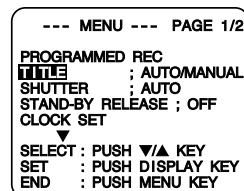
Camcorder auto-displays title greeting on selected holidays when power is first turned on. See title list below.



Before you begin...

- Connect Camcorder to power source.
- Insert cassette with record tab (page 11).
- Set POWER to CAMERA.

- 1 Press **MENU** for MENU mode.
Press **UP ▲** or **DOWN ▼** to select **TITLE**.

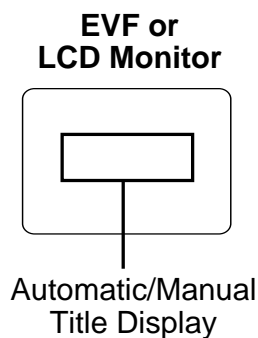


- 2 Press **DISPLAY** to select AUTO/MANUAL.
- 3 Press **MENU** to exit.
- 4 To record the title, press **RECORD/PAUSE**.
- 5 Press **TITLE** while recording to remove title.

Note:

- Once removed, title will not be auto-displayed. To redisplay, or select from other titles, use Manual Title (see below).

Automatic/Manual Title Display List

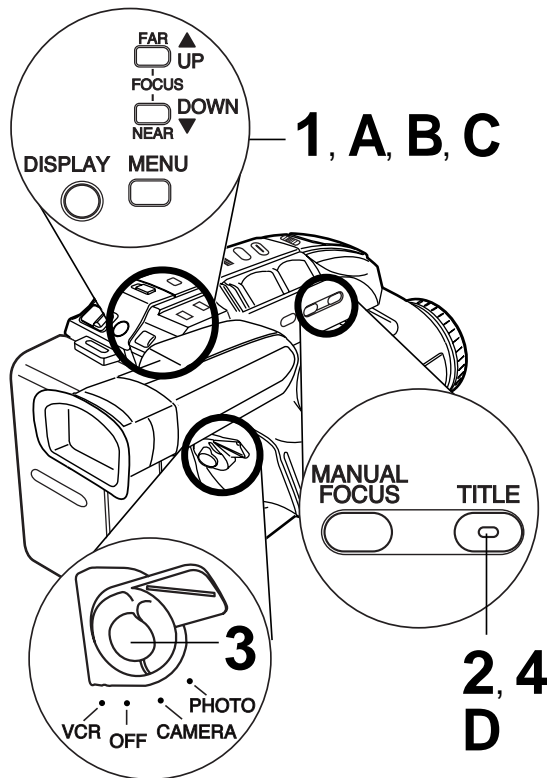


Dec. 31–Jan. 1	HAPPY NEW YEAR! / CHEERS!
Feb. 14	VALENTINE'S DAY / BE MY VALENTINE
2nd Sunday in May	HAPPY MOTHER'S DAY / WE LOVE YOU!
Last Monday in May	MEMORIAL DAY
3rd Sunday in Jun.	HAPPY FATHER'S DAY / WE LOVE YOU!
Jul. 4	INDEPENDENCE DAY
1st Monday in Sep.	LABOR DAY
Oct. 31	HAPPY HALLOWEEN
4th Thursday in Nov.	HAPPY THANKSGIVING
Dec. 24–25	MERRY CHRISTMAS / HO! HO! HO!
These Titles must be displayed manually.	HAPPY EASTER HAPPY ANNIVERSARY HAPPY BIRTHDAY VACATION WEDDING DAY A SPECIAL DAY

Intelligent Titler

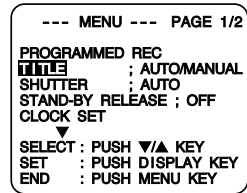
Before you begin...

- Connect Camcorder to power source.
- Insert cassette with record tab (page 11).
- Set POWER to CAMERA.



Manual Title

- 1 Confirm that TITLE: AUTO/MANUAL is set in Menu mode (steps 1~3, page 32).



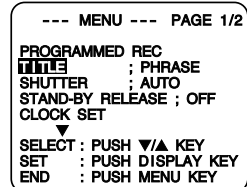
- 2 In Record/Pause mode, press **TITLE** repeatedly to display titles from list on page 32.
- 3 To record the title, Press **RECORD/PAUSE**.
- 4 Press **TITLE** while recording to remove title.

Note:

- To redisplay title, press **TITLE** in Record/Pause mode.

Phrase Title

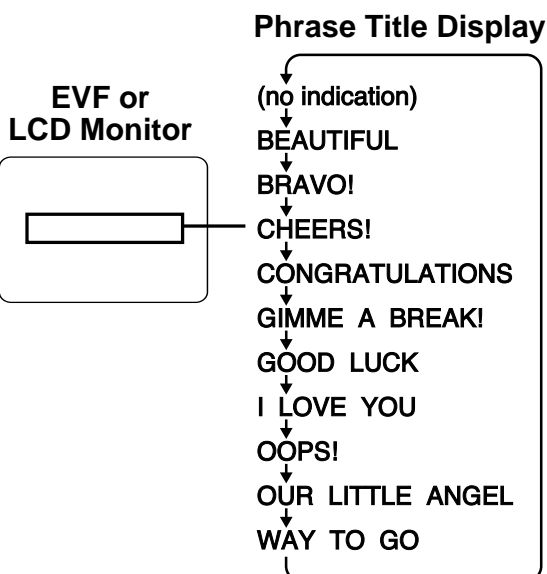
- A Press **MENU** for MENU mode. Press **UP ▲** or **DOWN ▼** to select **TITLE**.



- B Press **DISPLAY** to select PHRASE.
- C Press **MENU** to exit.
- D In Record/Pause mode, press **TITLE** repeatedly to display phrases from the list at left.
- E Do steps 3, 4 above to record and remove phrase.

Note:

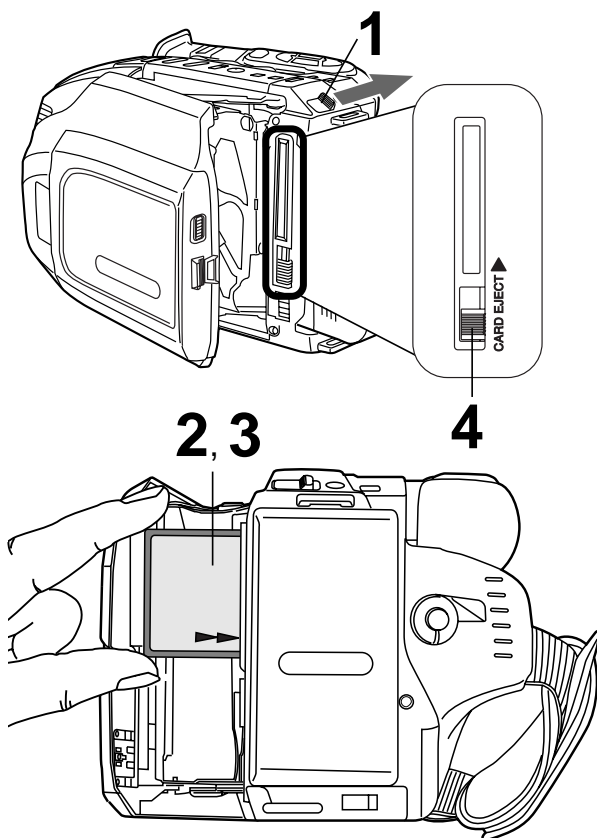
- To redisplay phrase, press **TITLE** in Record/Pause mode.



Digital Still Camera

CompactFlash Card Insertion/ Removal

The captured images will be stored on this CompactFlash Card.
Be sure to insert the CompactFlash Card before using the Built-in Digital Still Camera.



Before you begin...

- Connect Camcorder to power source.
- Set POWER to OFF.

- 1** Slide **TAPE EJECT** to open door.
- 2** Insert the **CompactFlash Card** into the CompactFlash Card Slot in the direction of the arrow. The side of the card with the arrow faces the back (battery side) of the camcorder (see the picture at the left).
- 3** Push the card fully into the Slot.
- 4** Slide **CARD EJECT**, to release the card.

Note:

- If CompactFlash Card is not inserted, "NO CF CARD" appears on-screen.
- Do not insert card in wrong direction.
- If card does not eject after sliding CARD EJECT, push card fully back into slot, then firmly slide the CARD EJECT again.
- To avoid dropping the card, do not slide CARD EJECT when the card slot is facing downward.
- If "CF CARD ERROR" appears on-screen, see page 56.

Concerning the CompactFlash Card

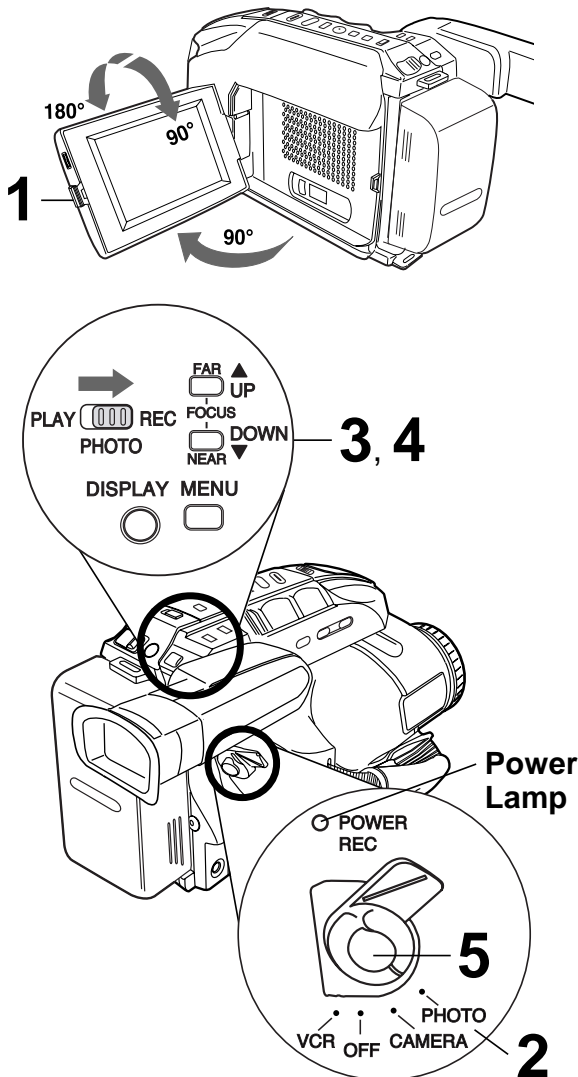
- Except for some special features, this card is compatible with other Panasonic brand products, like Digital Camera (PV-DC2590, PV-DC2090).
- Panasonic only guarantees compatibility with Panasonic brand cards and those bearing the SanDisk logo.
- This Camcorder can capture a maximum of 699 still images because of camera memory capacity. A larger CF card (optional) is required to capture 699 images.
In order to capture 699 images, a CF Card memory with approx. 62 MB is needed for FINE mode and approx. 21 MB is needed for Normal mode.

CAUTION:

- Do not bend, drop, apply high pressure or subject the card to strong shocks.
- Do not store it in places with high temperature, high humidity, a lot of dust, or places exposed to direct sunlight, or static electricity and strong electromagnetic waves.
- Keep the card's contacts free from dust, water or other foreign substances. Do not touch them with your fingers, etc.
- Do not disassemble or deform the card.
- Be sure to make a backup copy of important data.
- Do not affix other labels to the CompactFlash Card face or back as Card insertion/removal may become impossible.

Digital Still Camera

Recording



Note:

- Please note that the included 8 MB CompactFlash Card already contains 12 pre-recorded titles for your use. Please see page 41 for further details.
- If CompactFlash Card is not inserted, "NO CF CARD" appears on-screen. Set POWER to OFF, then insert the CompactFlash Card.
- If "CF CARD ERROR" appears on-screen, see page 56.
- Sound will not be recorded.
- The features below are not available while in PHOTO mode.
 - Auto Fade
 - Digital Fade
 - Color Digital Filter
 - Digital Zoom
 - Digital E.I.S.
 - Still/Strobe/Wide
 - Security Mode
 - Intelligent Titler
 - Digital Wipe Mode
 - Picture in Picture Wipe Title

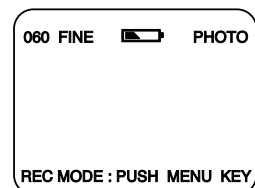
Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).

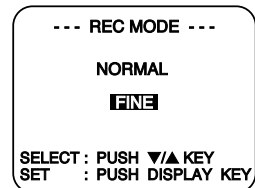
1 Press **LCD-OPEN** and swing LCD monitor fully open. Adjust viewing angle.

2 Set **POWER** to **PHOTO**.
Built-in Lens Cover opens and Power Lamp lights.
• Be sure **POWER** is fully rotated to **PHOTO** position.

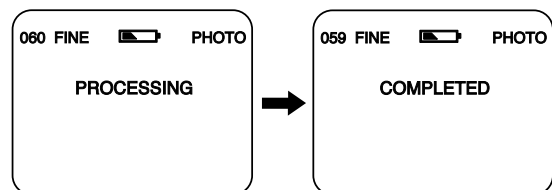
3 Slide **PHOTO** to **REC**.



4 Press **MENU** for REC Mode.
Press **UP ▲** or **DOWN ▼** to select **NORMAL** or **FINE** (page 49).
Then, press **DISPLAY** to set.



5 Press **RECORD/PAUSE** to capture image.
• As the image is processed, the status screens below appear.
The next image may be captured after "COMPLETED" disappears.
• Depending on the image taken, the image page remaining indication may not change, or it may be decreased by 2 images.



- For sharper images, set electronic shutter to higher speed when shooting in bright conditions, such as outdoors.

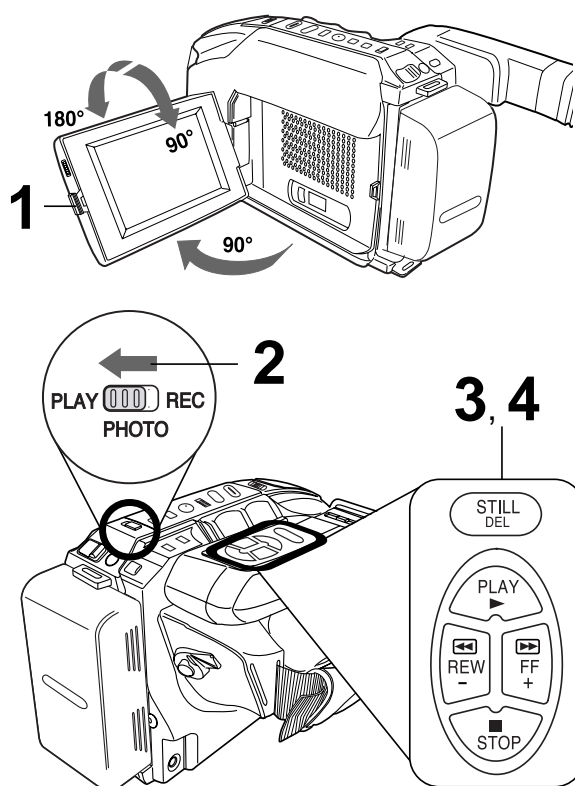
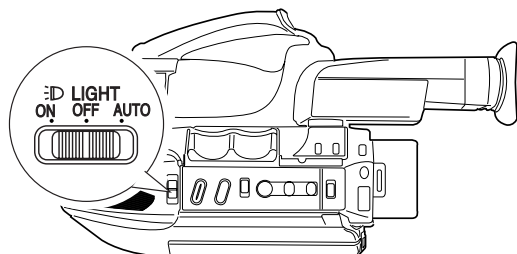
WARNING:

Do not, under any circumstances, remove the card immediately after pressing the **RECORD/PAUSE** (during recording of an image) or while deleting. This could damage the format of the card and make it unusable.

Digital Still Camera

Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to PHOTO.



Note:

- If CompactFlash Card is not inserted, "NO CF CARD" appears on-screen. Set Power to OFF, then insert the CompactFlash Card.
- Pictures captured with other brand products cannot be used with this Camcorder.
- If "INCOMPATIBLE IMAGE" appears on-screen, the size of the captured image cannot be played back on this Camcorder.
- Do not change POWER setting to CAMERA or change recording mode while "PLEASE WAIT" is displayed.
- If "CF CARD ERROR" appears on-screen, see page 56.

Using the Light

For capture of still images in dim lighting.

Set LIGHT to AUTO.

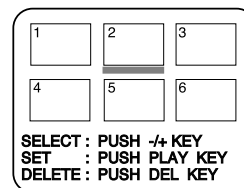
When RECORD/PAUSE is pressed to capture an image in dim lighting, the Light comes on for about 2 seconds, the image is captured, then the light goes out.

Or, set LIGHT to ON/OFF manually.
(See page 15 for further details.)

Playback

1 Press LCD-OPEN and swing LCD monitor fully open. Adjust viewing angle.

2 Slide PHOTO to PLAY.
The Multi Image Playback screen appears. The last captured image screen is underlined.



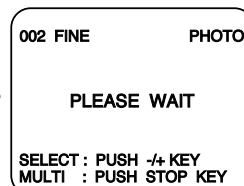
- If there are no recordings on the card, "NO PICTURE" appears on-screen.
- In NORMAL or FINE mode, the color of the Multi Image page number is as follows:

NORMAL mode → green
FINE mode → white

3 Press + (FF) → next.
Press - (REW) → previous.

- The selected image will be underlined in green.
- Continue pressing + (FF) or - (REW) for next or previous page.

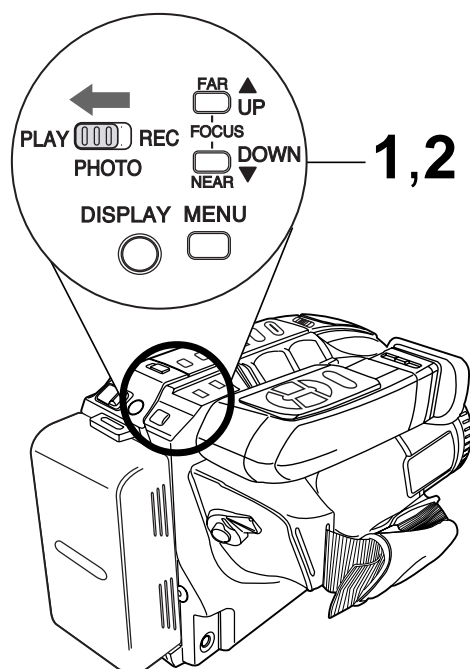
4 Press PLAY to display image. This screen appears followed by image.



- Press DISPLAY to remove or redisplay this screen.
- Press STOP to redisplay Multi Image playback screen.

Digital Still Camera

Displayed Directory/Image Number

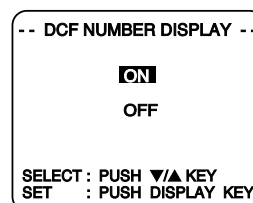


Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to PHOTO.

1 Repeat steps 1 and 2 on page 36 to display Multi Image Playback screen. Select any image and press PLAY.

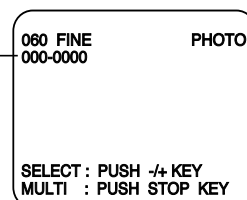
2 Press MENU for DCF NUMBER DISPLAY menu.
Press UP▲ or DOWN▼ to select ON or OFF. Then, press DISPLAY to set.



ON → Directory/Image Number is displayed.

OFF → Directory/Image Number is not displayed.

Directory/Image Number



Note:

- Directory/Image Number “xxx-xxxx” (x indicates the number) is assigned automatically.
- Even if ON is set, if the Directory/Image Number does not correspond with DCF it is not displayed.
- The Directory/Image Number becomes the folder and file name when viewed with card reader.

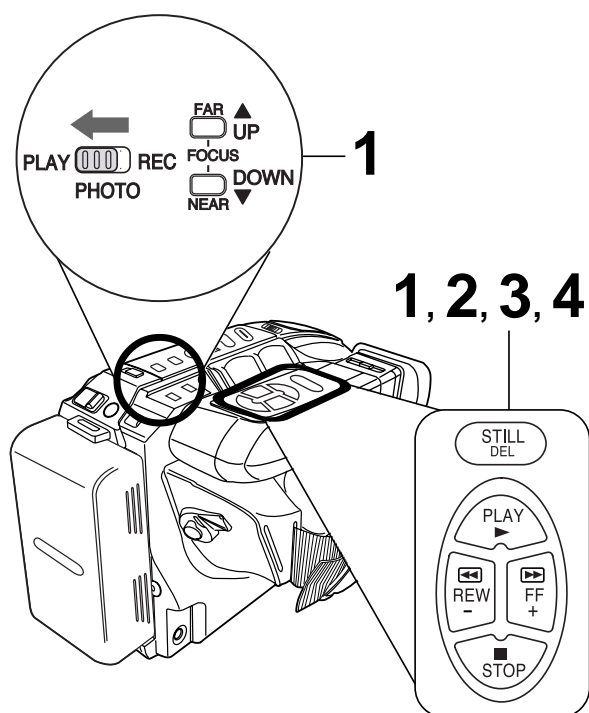
Digital Still Camera

Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to PHOTO.
Slide PHOTO to PLAY.

Important :

Once deleted, images cannot be restored.



Note:

- Pictures captured with other brand products cannot be used with this Camcorder.
- If "CF CARD ERROR" appears on-screen, see page 56.

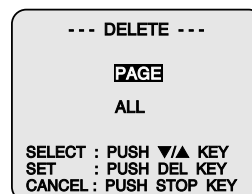
WARNING:

Do not, under any circumstances, remove the card immediately after pressing the RECORD/PAUSE (during recording of an image) or while deleting. This could damage the format of the card and make it unusable.

Deleting Specific Image Pages

Delete older images to make room for new ones.

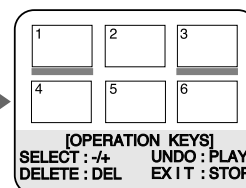
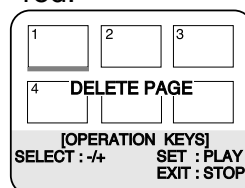
- 1 Press **DEL(STILL)** for DELETE menu. Press **UP ▲** or **DOWN ▼** to select **PAGE**.



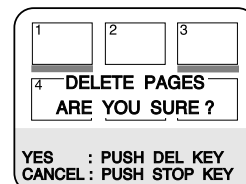
- To exit menu at any time, press STOP.

- 2 Press **DEL(STILL)** for Multi Image screen. Press **+** (**FF**) or **-** (**REW**) to select image page. Press **PLAY** once to set. Or, press twice to undo.

- Press **+** (**FF**) or **-** (**REW**) and **PLAY** repeatedly to select several pages at one time.
- The selected image will be underlined in green.
- You can delete images underlined in red.



- 3 Press **DEL(STILL)**. This message appears.

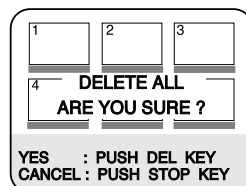


- 4 Press **DEL(STILL)** to delete the page.
 - As image pages are deleted, page numbers adjust automatically.

Deleting All Image Pages

All image pages are deleted from memory.

- 1 Do step 1 above, and select **ALL**.
- 2 Press **DEL(STILL)**. This message appears.

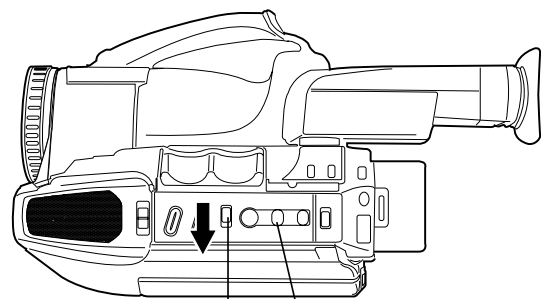


- 3 Press **DEL(STILL)** to delete all pages.
 - "NO PICTURE" appears on-screen after deletion.

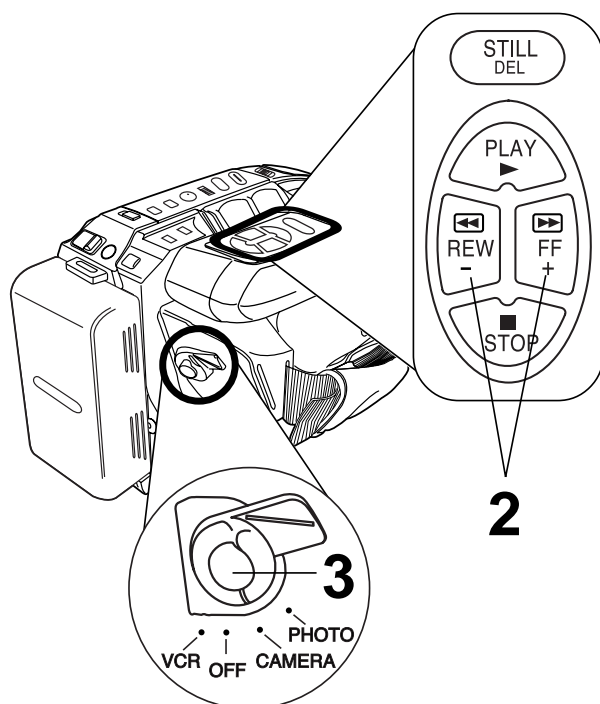
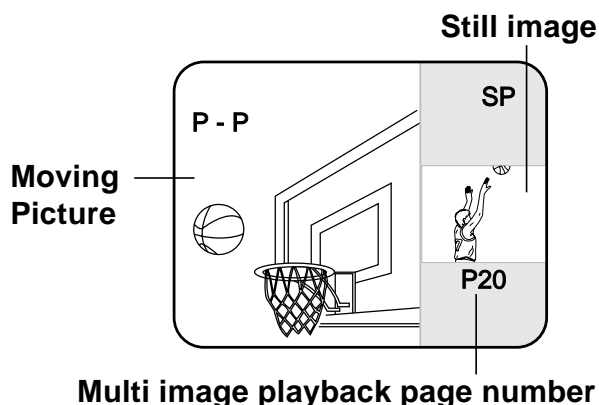
Digital Still Camera

Picture in Picture Wipe Title

Captured still images (page 35) can be recorded along with the current picture.



1 MODE



Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to CAMERA.

(P - P = Picture in Picture)

1 Set DIGITAL SELECT to DIGITAL WIPE.

- A still image captured on the CF card and the Multi image playback page number is displayed on the right side of the screen.
- If there are no recordings on the card, "NO PICTURE" appears on-screen.

2 Press + (FF) or - (REW) to select still image to be used.

3 Start recording (page 16).

- When recording starts, Multi image playback number disappears. Then the captured still images can be recorded along with the current picture.
- To exit from the Picture in Picture Wipe title mode, **press MODE** (page 40).

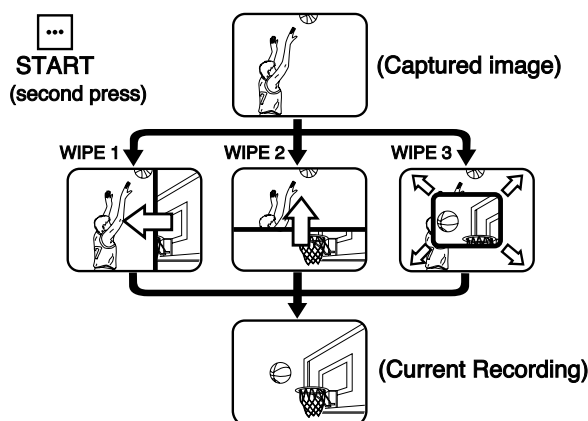
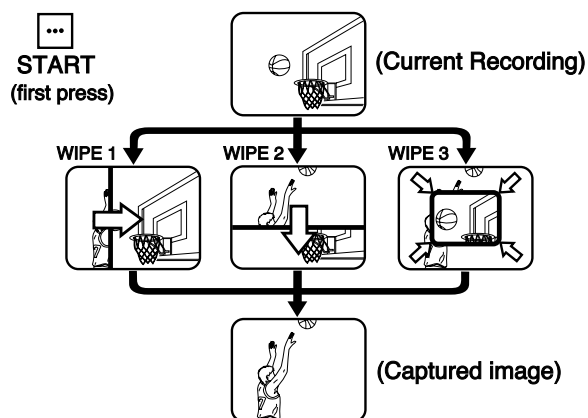
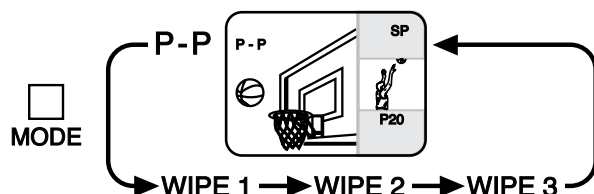
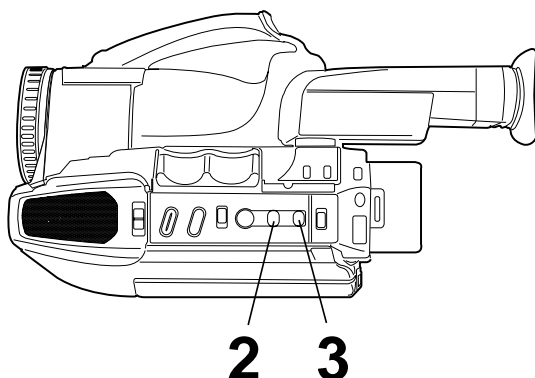
Note:

- If CompactFlash Card is not inserted, "NO CF CARD" appears on-screen. Set Power to OFF, then insert the CompactFlash Card.
- Pictures captured with other brand products cannot be used with this Camcorder.
- If "INCOMPATIBLE IMAGE" appears on-screen, the size of the captured image cannot be played back on this Camcorder.
- If "CF CARD ERROR" appears on-screen, see page 56.
- If Picture in Picture Wipe Title is selected, the following functions are not available: Security mode, Auto Fade, Digital Fade, Digital Filter, Digital Zoom, Digital E.I.S., Still/Strobe/Wide.

Digital Still Camera

Digital Wipe Mode

Insert a captured still image into the current recording, or vice versa, in one of three wipe effects.



Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to CAMERA.

1 Repeat steps 1 and 2 on page 39 to set Picture in Picture Wipe title.

2 Press **MODE** repeatedly for Wipe effect 1, 2, or 3 (See left).
 • WIPE 1 will flash for a while to store the image for the wipe.

3 Press **START**:
 once → inserts captured image.
 twice → inserts current recording picture.
 • You can freeze the wipe in progress by pressing **START**. Press **START** again to resume wipe.

Note:

- If CompactFlash Card is not inserted, "NO CF CARD" appears on-screen. Set Power to OFF, then insert the CompactFlash Card.
- Pictures captured with other brand products cannot be used with this Camcorder.
- If "INCOMPATIBLE IMAGE" appears on-screen, the size of the captured image cannot be played back on this Camcorder.
- If "CF CARD ERROR" appears on-screen, see page 56.
- If Digital Wipe mode is selected, the following functions are not available: Security Mode, Auto Fade, Digital Fade, Digital Filter, Digital Zoom, Digital E.I.S., Still/Strobe/Wide.

Digital Still Camera

PhotoShot Title Library

The included 8 MB CompactFlash Card already contains 12 pre-recorded titles. You can insert any one of the 12 included pre-recorded titles into your current video recording by following the steps outlined below.

CAUTION:

If you delete the following pre-recorded titles, they will not be restored.

Before you begin...

- Connect Camcorder to power source.
- Insert the CompactFlash Card (page 34).
- Set POWER to CAMERA.

1

Set **DIGITAL SELECT** to **DIGITAL WIPE**.

2

Press **+ (FF)** or **- (REW)** to select still image to be used.

Please see page 39 for further details.

3

Start recording (page 16).



Panasonic



Anniversary



Happy Birthday



Bon Voyage



Congratulations



Graduation



It's a Girl!



It's a Boy!



Our Wedding



Surprise!



The Wedding



Vacation!

Special Features

PC Connection

Digital PhotoShot Software

A live or captured image can be transferred to your PC (Personal Computer).

Before you begin...

- Turn your PC off.
- Set Camcorder POWER to OFF.

System Requirements for Digital PhotoShot

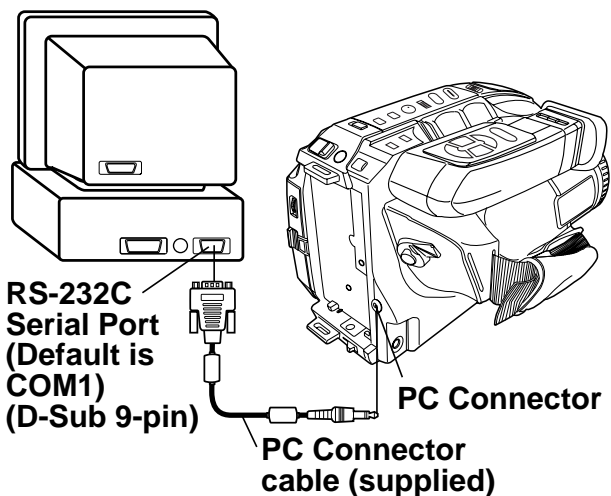
- IBM PC/AT or compatible.
- Intel® Pentium® Processor.
- Microsoft® Windows®95 or Windows®98 or Windows®Me or Windows®2000.
- RAM: 16 MB or more.
- 2 MB of available hard-disk space.
- 256 color monitor (full color recommended).
- 3.5 inch 1.44 MB floppy disk drive (for installation).
- RS-232C serial port (D-Sub 9-pin).
An adaptor (D-Sub 9-pin male to a D-Sub female) is required for a D-Sub 25-pin.
- Mouse or other pointing device.

PC-Camcorder Connection

Connect Camcorder PC jack to the serial port on your PC (Personal Computer) using the supplied PC connector cable. Refer to PC or Windows manual to identify which COM port to be used for connection.

Note:

- Be sure to turn PC off before connection for proper image transfer.
- After Camcorder and PC are connected by starting up the software included, video recording is not possible.

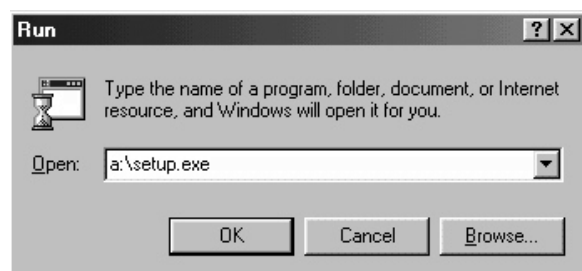


Software Installation (Windows 95/98/Me/2000)

Before you begin...

- Your PC is in the power on mode.

- 1 Turn on PC (Personal Computer) and start up Windows.
- 2 Insert Digital PhotoShot disk (Windows 95/98/Me/2000) into a floppy disk drive.
- 3 Click on Start, then “Run...”
- 4 Type in “a:\setup.exe” and click OK.
 - If your 3.5 inch floppy disk drive is not “A”, use appropriate letter.
- 5 Follow instructions as they appear on PC screen until the installation is complete.
 - Setup window will disappear when the installation is complete.



PC Connection

Before you begin...

- Insert the CompactFlash Card (page 34).
- Make Camcorder-PC connections (page 42).
- Turn your PC on.
- Set Camcorder POWER to PHOTO.

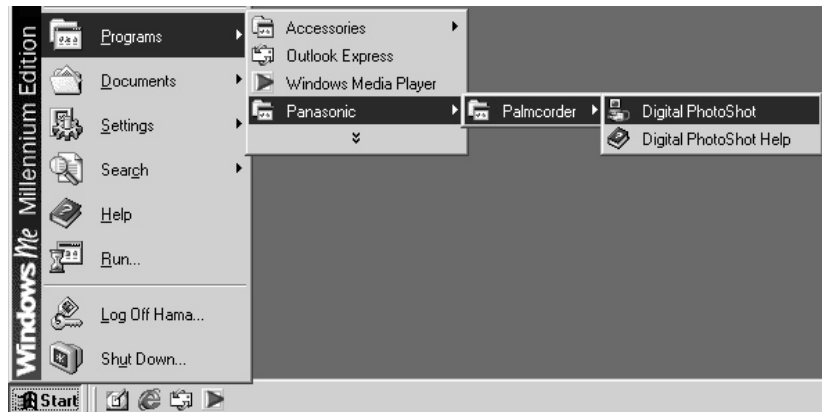
Running the Software (Windows 95/98/Me/2000)

1 Select Programs/
Panasonic/Palmcorder/
Digital PhotoShot from
the Start menu.

2 “Digital PhotoShot” is
opened.

Note:

- COM Port and Baudrate are automatically selected.



Refer to Help for information about application operation and other Error messages.

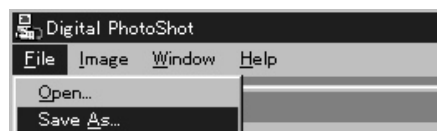
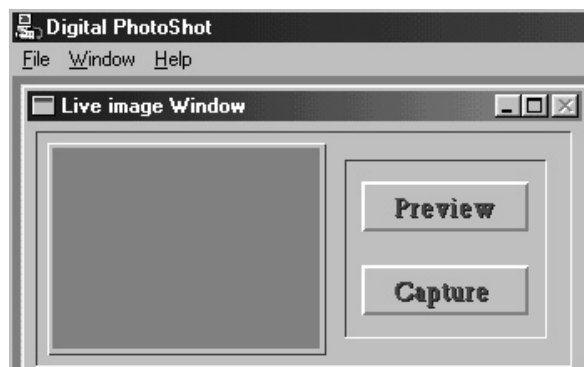
Using Live Image Data

You can capture the current Camcorder picture to your PC.

- 1** Repeat steps 1 and 2 on above to run the Software.
- 2** Click on “Window,” then select “1 Live image Window.”
- 3** Click on “Preview,” then Click on “Capture.”
 - Repeat this step to decide on an image.
 - Captured image is transferred to your PC when you click on “Capture”.
- 4** Click on “Window,” then select “Live photo Zoom In.”
- 5** Click on “File,” then select “Save As.”
 - Captured image is stored to your PC.

Note:

- If, while transferring the image to your PC, the displayed picture appears abnormal, restart the PC application and turn Camcorder POWER off, and then back on.



PC Connection

Before you begin...

- Insert the CompactFlash Card (page 34).
- Make Camcorder-PC connections (page 42).
- Turn your PC on.
- Set Camcorder POWER to PHOTO.

Using CF Card Image Data

Pictures captured with your Camcorder can be transferred to your PC.

1

Repeat steps 1 and 2 on page 43 to run the Software.

2

“Preview Window” screen appears.

3

Select the image data you want to transfer to your PC.

- The selected image will be underlined in green.

4

Click on:

Transfer

- The picture image is transferred to your PC and displayed.

Delete

- The picture image is deleted.

Save...

- The picture image is transferred to your PC and displayed. Save window appears.



Note:

- If, while transferring the image to your PC, the displayed picture appears abnormal, restart the PC application and turn Camcorder POWER off, and then back on.

Using PC Image Data

You can use JPEG or Bitmap files from your PC for Picture in Picture Wipe Title and Digital Wipe by transferring them to the Camcorder using the Digital PhotoShot Software.

1

Repeat steps 1 and 2 on page 43 to run the Software.

2

Click on “Window,” then select “2 Preview Window.”

3

Click on “File,” then Click on “Open.”

- At your PC, please select and open the data you want to transfer to the Camcorder.

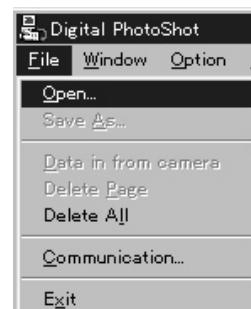
Note:

- When transferring image data larger than VGA size (640x480) from the PC to the Camcorder, the perimeter of the image is cropped to VGA size.

4

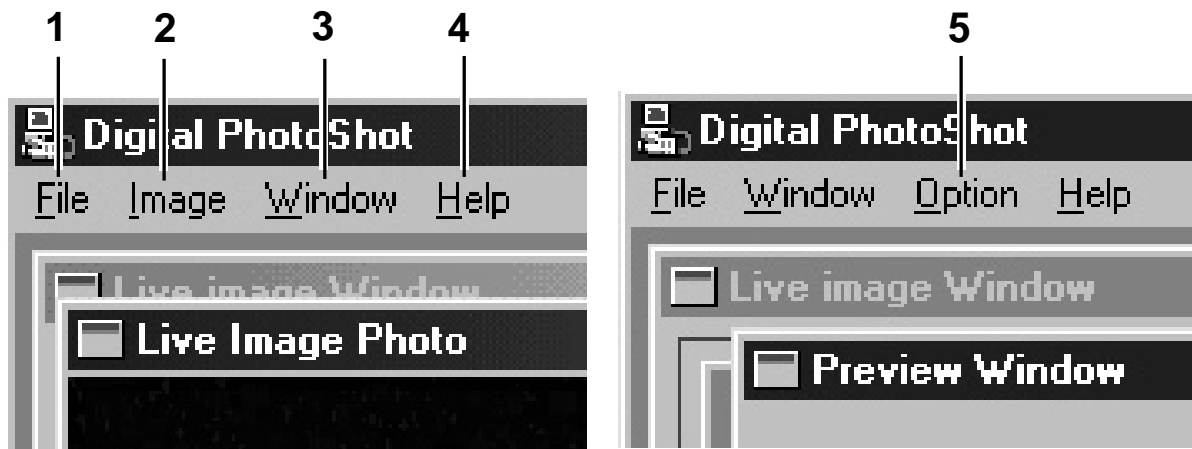
Click on “File,” then select “Data out to camera,” then select **Fine** or **Normal** mode.

- Your PC image data is transferred to the Camcorder.



44 For assistance, please call : 1-800-211-PANA(7262) or send e-mail to : consumerproducts@panasonic.com

Driver Quick Reference



1 File

- **Open...**
To open an existing image (Bitmap or JPEG).
- **Save As**
To save the active image file under a new file name while preserving the original file.
- **Data in from CAMERA**
To display a dialog box listing all images in the CF Card memory along with Preview, Transfer, Delete, etc. commands.
- **Delete Page**
To delete the selected image from the CF Card memory.
- **Delete All**
To delete all images from the CF Card memory.
- **Communication**
To specify the port to which the Camcorder is connected.
- **Print...**
To print the currently active image.
- **Exit**
To quit the "Digital PhotoShot" application.

2 Image

- **Image Adjustment**
To modify the captured image as desired.
- **Copy to Clipboard**
To copy a view image to clipboard.

3 Window

- **Close Image**
Select "Close image" to close all view windows.
- **Live Photo Zoom In**
To open a view window.

4 Help

- **Help**
To display the Help screen.
- **About**
To display software version information.

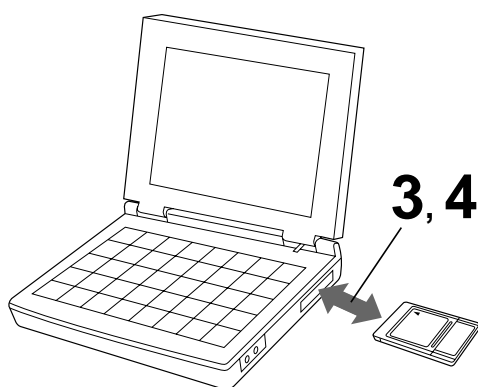
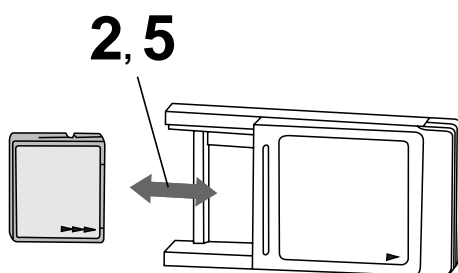
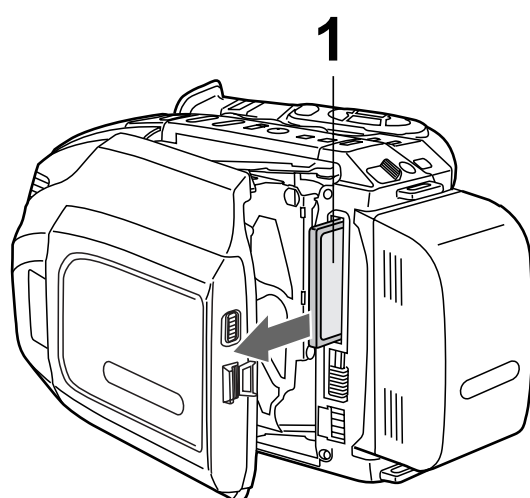
5 Option

- **Reload**
To load the picture from the Camcorder to your PC again when Camcorder CF Card was changed.

Using a PCMCIA Adaptor (optional)

If your PC has a PCMCIA type II slot, you can insert the CompactFlash Card into a PCMCIA adaptor (optional, page 52) to transfer images, captured with this Camcorder only, to your PC.

Inserting a CompactFlash Card



Before you begin...

- Turn your PC on.
- Set Camcorder POWER to OFF.

1 Remove the **CompactFlash Card** from the Camcorder (page 34).

2 Hold the **CompactFlash Card** so that the arrow side faces up and points toward the **PCMCIA Adaptor**. Securely insert the card into the PCMCIA Adaptor slot as far as it will go.

3 Hold the **PCMCIA Adaptor** so that the arrow side points toward the PCMCIA type II slot of **your PC (Personal Computer)**. Securely insert the PCMCIA Adaptor as far as it will go.

- Depending on the PC, it may be necessary to turn the PCMCIA Adaptor upside down in order to insert the card.

4 To remove, push the eject button on your PC (may vary by machine) and pull the **PCMCIA Adaptor** out until it is no longer inserted in the **PC (Personal Computer)**.

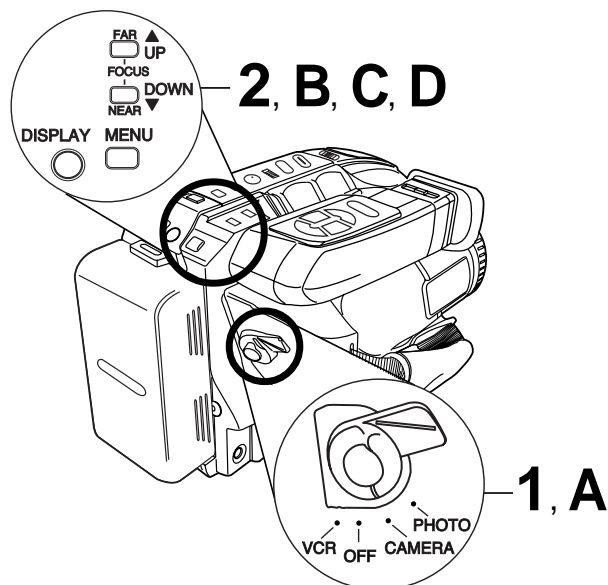
5 Pull the **CompactFlash Card** out of the **PCMCIA Adaptor**.

Note:

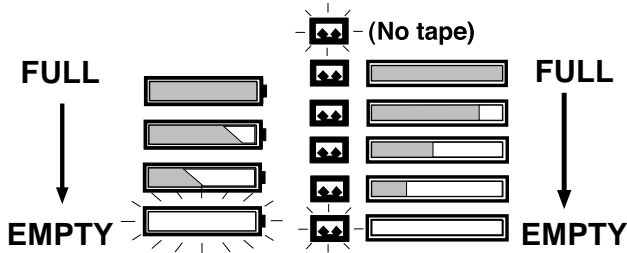
- Do not remove the PCMCIA Adaptor from the PC while the PC is working or while image data is being transferred between the CompactFlash Card and the PC (including operation such as opening and storing images), this will cause irreversible damage to the memory.
- If you change file name or folder in the CF card, the images will be displayed properly on PHOTO mode.

Viewfinder/LCD Monitor Indications

Tape remaining and battery charge level can be displayed.



Battery Remaining: Tape Remaining:

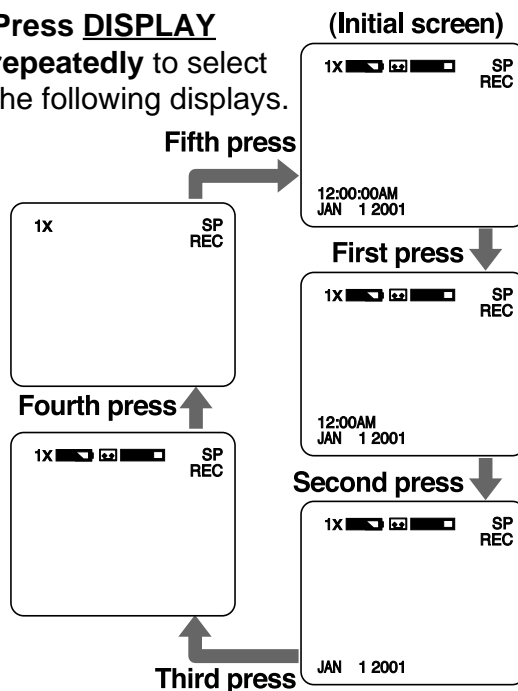


Before you begin...

- Connect Camcorder to power source.

1 Set **POWER** to **CAMERA**.

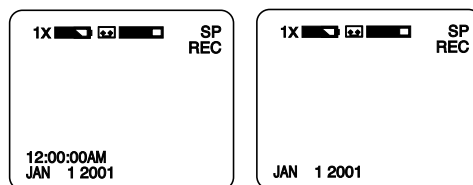
2 Press **DISPLAY** repeatedly to select the following displays.



- Tape remaining indicator operates a few seconds after tape starts moving.

Recording the Date and Time

- Do steps 1 and 2 above to select time/date, date only, or no display.
- Start a recording (page 16).
 - Only the Date and/or Time are recorded.

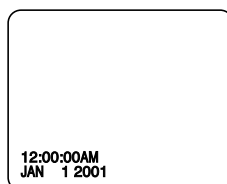
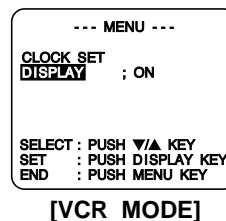
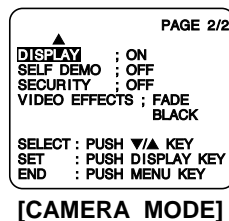


Display-Off Mode

No Indication, except Intelligent Titler (pages 32, 33), will be displayed.

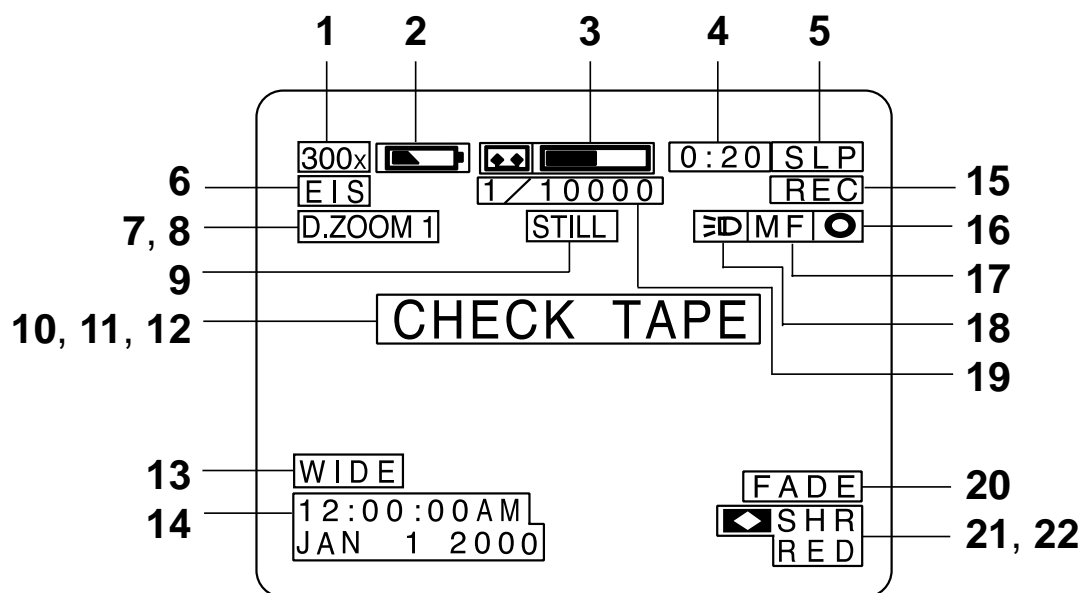
- Set **POWER** to **CAMERA** or **VCR**.
- Press **MENU** for **MENU** mode.
Press **UP** ▲ or **DOWN** ▼ to select **DISPLAY**.
- Press **DISPLAY** to select **OFF**.
Press **MENU** to exit.
- Press **DISPLAY** repeatedly to remove time/date.

Indications are restored the next time Camcorder is turned on.



Viewfinder/LCD Monitor Indications

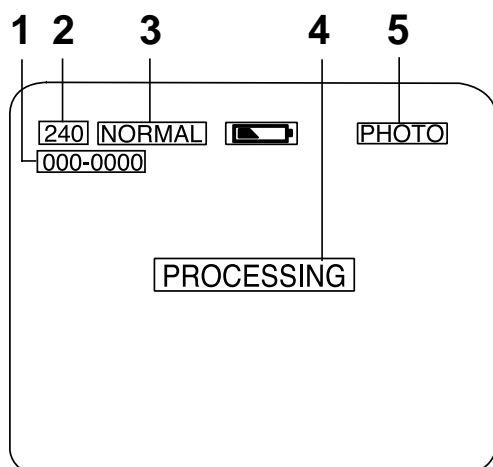
CAMERA/VCR mode



- 1 Zoom Magnification level** (pages 23, 29).
- 2 Battery Remaining** (page 47).
“WARNING LOW BATTERY” appears and Power Lamp starts flashing 15 seconds before Camcorder shuts off.
- 3 Tape Remaining** (page 47).
“” flashes and “TAPE END” appears for 5 seconds when:
 - End of tape is reached.
 - “” flashes 1 minute and “CHECK TAPE” appears for 5 seconds when:
 - RECORD/PAUSE is pressed with no cassette, or cassette has no record tab in Camera (RECORD) mode.
 - PLAY, FF or REW is pressed with no cassette inserted in VCR mode.
- 4 10-Second Reminder**
Each time a recording is started, a 10 second incremental display (up to 59:50) lets you monitor how long one scene is recorded.
 0:00 0:10 0:20 59:50
 ↑
 (return to 0:00 and continue)
- 5 TAPE SPEED** (pages 11, 16).
(SP=standard play, SLP=super long play).
- 6 Digital E.I.S.** (page 29).
- 7 Digital Zoom** (page 29).
- 8 Digital Wipe** (pages 39, 40).
- 9 Still/Strobe** (page 30).
- 10 VCR-MODE**
“VCR-MODE” appears 1 minute when POWER is set to VCR or if RECORD/PAUSE is pressed in VCR mode.
- 11 DEW**
If moisture condensation occurs in unit, “WARNING DEW DETECTED” appears, Power Lamp flashes, and Camcorder will shut off in 15 seconds. Wait until lamp no longer flashes when Camcorder is turned on to use.
- 12 Security Mode** (page 31).
- 13 Wide Screen** (page 30).
- 14 Date and Time** (pages 13, 14).
- 15 Operating Mode**
 - REC (record) • PAUSE
 - FF (fast forward) • PLAY
 - REW (rewind)
- 16 Backlight** (page 23).
- 17 Manual Focus** (page 24).
- 18 Light ON/OFF** (page 15).
- 19 High Speed Shutter** (page 25).
- 20 Fade** (page 26).
- 21 Color Digital Fade** (page 27).
- 22 Color Digital Filter** (page 28).

Viewfinder/LCD Monitor Indications

PHOTO mode



1 Directory/Image Number (page 37)

2 Image Page Remaining Indication (page 35)

- Image pages left in selected mode. "000" flashes when memory is full.
- Memory capacity provided all pictures are taken in the same mode:
 "NORMAL" mode → Approx 240 images (Supplied 8 MB CompactFlash Card)
 "FINE" mode → Approx 60 images (Supplied 8 MB CompactFlash Card)

3 REC MODE

- NORMAL or FINE mode.
- Image Size :
 "NORMAL" mode → 320 x 240 pixels.
 "FINE" mode → 640 x 480 pixels.

4 Image Status Indication

Image status is displayed when captured.

PROCESSING:

Image is being processed.

Note: Do not change setting to CAMERA or change recording mode while "PROCESSING" is displayed.

COMPLETED:

Image processing is completed.

The next image may be captured when "COMPLETED" disappears.

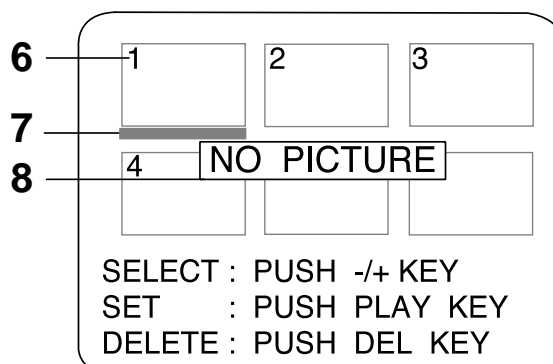
PLEASE WAIT:

Displayed when image is selected from Multi Image Playback screen.

Note: Do not change POWER setting to CAMERA or change recording mode while "PLEASE WAIT" is displayed.

5 Recording Mode

- POWER is set to PHOTO.



SELECT : PUSH -/+ KEY

SET : PUSH PLAY KEY

DELETE : PUSH DEL KEY



6 Multi Image Playback page number.

"NORMAL" mode → green

"FINE" mode → white

7 Currently selected image is underlined in green or red.

8 Image Status Indication

NO PICTURE:

No image is captured, all images are deleted from card.

9 CF CARD Indication

When the CompactFlash Card is not inserted in CAMERA or PHOTO mode, "NO CF CARD" appears.

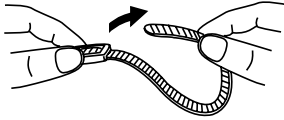
If the CompactFlash Card is defective, "CF CARD ERROR" appears.

Operation Notes

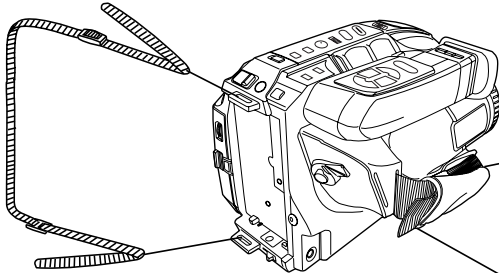
Attaching Shoulder Strap

Remove Battery Pack before doing steps.

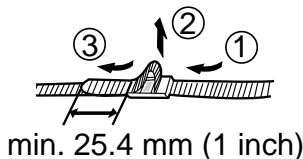
- 1 Undo strap ends from buckles.



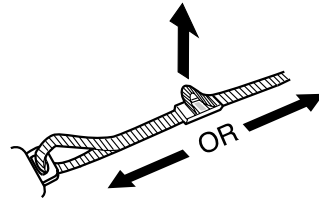
- 2 Thread strap ends through Strap Rings on Camcorder.



- 3 Re-insert the strap ends into buckles.

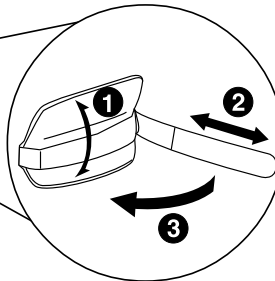


Adjust the Length of the Shoulder Strap



Pull a loop of strap from buckle, then pull strap tight to shorten or lengthen.

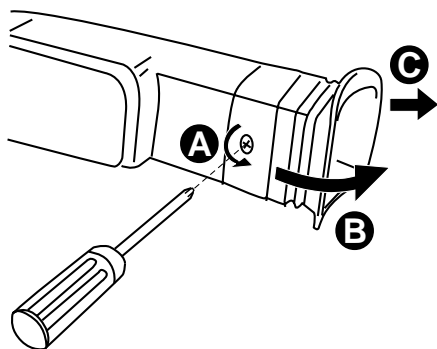
Hand Strap



Adjust Hand Strap length to fit your hand as shown.

Cleaning EVF (Electronic Viewfinder)

To Remove



- 1 **A** Remove the screw with a Phillips screwdriver.
Turn counterclockwise.
B Turn the EVF Eyepiece.
C Pull the EVF Eyepiece.
- 2 Remove any lint or dust particles with a soft clean cloth being careful not to scratch the glass surfaces.
- 3 Replace the EVF Eyepiece and the screw.

Replacing Clock/Remote Battery

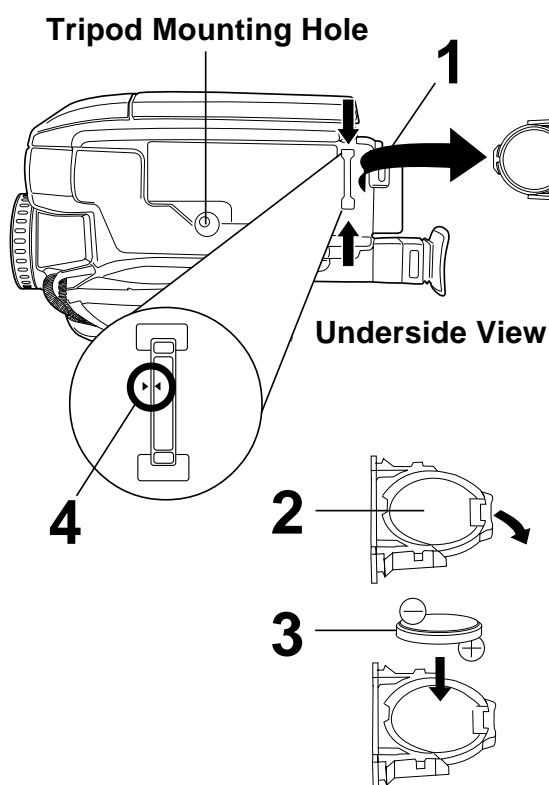
The clock and remote batteries are pre-installed. Follow the steps below if replacement becomes necessary.

WARNING:

Replace battery with Panasonic PART NO. VSBW0004 (CR2025) only. Use of another battery may present a risk of fire or explosion.

Caution: Battery may explode if mistreated. Dispose of used battery promptly. Keep away from children. Do not recharge, disassemble or dispose of in fire.

Clock Battery

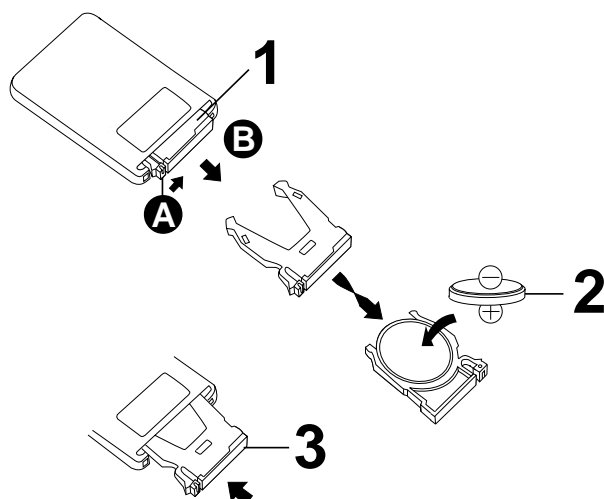


- 1** While pinching 2 tabs, pull Battery Tray out.
- 2** Bend middle tab out and remove Battery.
- 3** Snap new Battery (\oplus mark down) into Battery Tray.
 - Do not reverse the polarity.
- 4** Insert Battery Tray so the triangle marks meet.

Note:

- Keep Battery out of children's reach. Swallowing it may be harmful.
- Improperly installed, discharged, or missing battery causes "CLOCK BATTERY" to appear when DISPLAY is pressed.
- Battery life is approximately 5 years.

Remote Battery



- 1** **A** While pressing stopper tab, **B** pull Battery Tray out.
- 2** Insert battery into tray with \oplus mark down.
 - Do not reverse the polarity.
- 3** Replace Battery Tray.

Palmcorder Accessory System

For ordering instructions, see the Accessory Order Form page.

- The listed standard battery use times are based on continuous recording using this Palmcorder.

Accessory #	Figure	Description	Price
PV-A17		AC Adaptor with DC Power Cable (Charging of the Nickel Cadmium Battery)	\$139.95
PV-A19		AC Adaptor with DC Power Cable (Charging of the Nickel Cadmium Battery or Nickel Metal Hydride Battery)	Call For Pricing
HHR-V60A/1B		Up to 6 hr Battery Pack (Rechargeable Nickel Metal Hydride Battery)	\$119.95
HHR-V40A/1B		Up to 4 hr Battery Pack (Rechargeable Nickel Metal Hydride Battery)	\$69.95
HHR-V20A/1B		Up to 2 hr Battery Pack (Rechargeable Nickel Metal Hydride Battery)	\$59.95
PV-AA6		"AA" Battery Case	\$20.00
PV-C16		Car Battery Cord	\$70.00
PV-P1		VHS PlayPak	\$39.95
PV-H18A		Soft Sided Carrying Case	\$49.95
KXL-D55		PCMCIA Adaptor	\$39.00

Note:

- Prices subject to change without notice.

Palmcorder Accessory Order Form

Please photocopy this form when placing an order.

1. Palmcorder Model # _____

2. Items Ordered

Accessory #	Description	Price Each	Quantity	Total Price
Subtotal				
Your State & Local Sales Tax				
Shipping & Handling				6.95
Total Enclosed				

3. Method of payment (check one)

☐ Check or Money Order enclosed (NO C.O.D.SHIPMENTS)

☐ VISA Credit Card # _____

☐ MasterCard Expiration Date _____

☐ Discover Customer Signature _____

Make Check or Money Order to: PANASONIC ACCESSORIES

(Please do not send cash)

4. Shipping information (UPS delivery requires complete street address)

Ship To:

Mr.

Mrs.

Ms.

First _____ Last _____

Phone #:

Day () _____

Street Address _____

Night () _____

City _____ State _____ Zip _____

TO OBTAIN ANY OF OUR PALMCORDER ACCESSORIES YOU CAN DO ANY OF THE FOLLOWING:

VISIT YOUR LOCAL PANASONIC DEALER

OR

CALL PANASONIC'S ACCESSORY ORDER LINE AT 1-800-332-5368

[6 AM-5 PM M-F, 6 AM-10:30 AM SAT, PACIFIC TIME]

OR

MAIL THIS ORDER TO: PANASONIC SERVICES COMPANY ACCESSORY

ORDER OFFICE

20421 84th Avenue South Kent, WA. 98032

For Your Information

Specifications

Power Source:	Compact VHS Camcorder: DC 6 V AC Adaptor: 110/120/220/240 V AC, 50/60 Hz Battery: Nickel-Cadmium Type DC 6 V
Power Consumption:	Compact VHS Camcorder: 6V DC 8.5 W (Max. 11.5 W) AC Adaptor: 19 W 1.2 W (when not in use.)
Video Signal:	EIA Standard (525 lines, 60 fields) NTSC color signal
Video Recording System:	2 rotary heads plus flying erase head. Helical scanning system
Audio:	1 track
Pick-Up System:	Sequential color difference field reverse system
Pick-Up Device:	One integral color filter Charge Coupled Device (CCD)
Lens:	26:1 zoom lens, F1:1.6 with auto iris control Focal length: 3.8 mm - 98.8 mm 4 speed power zoom function
Viewfinder:	10.2 mm (0.4 inch) Electronic Viewfinder
LCD Monitor:	76.2 mm (3.0 inch) Liquid Crystal Display
Memory:	8 MB CompactFlash Card
Image Size:	FINE: 640 × 480 pixels Normal: 320 × 240 pixels
Image Storage:	FINE: Approx. 60 images Normal: Approx. 240 images
Image Format:	JPEG
Minimum Illumination Required:	0.8 lx (F1:1.6) 0.08 footcandles 7 lx (F1:1.6) 0.7 footcandles (EIA Standard)
Operating Temperature:	0 °C~40 °C (32 °F~104 °F)
Operating Humidity:	10 %~75 %
Weight:	Compact VHS Camcorder: 1.02 kg 2.25 lbs. AC Adaptor: 0.3 kg 0.66 lbs.
Dimensions:	Compact VHS Camcorder: 120 (W) × 122 (H) × 186.5 (D) mm 4-3/4 (W) × 4-3/4 (H) × 7-3/8 (D) inch AC Adaptor: 68 (W) × 41 (H) × 140 (D) mm 2-11/16 (W) × 1-5/8 (H) × 5-1/2 (D) inch

Weight and dimensions shown are approximate.

Designs and specifications are subject to change without notice.

Before Requesting Service

If a problem arises, you may be able to correct it yourself.
See Symptom and Correction list below.

Symptom	Correction
No picture in EVF or LCD monitor ...	<ul style="list-style-type: none"> • Connect Power Source. (pp. 9, 10) • Set POWER to VCR or CAMERA. (pp. 16, 20) • Check for Dew Indication. (p. 48) • Use fully charged Battery. (p. 9) • Firmly connect all needed cables. (p. 10)
The right side of the screen appears grayish...	<ul style="list-style-type: none"> • Be sure to slide Digital Select to Digital Wipe. (p. 40)
Video cassette cannot be inserted ...	<ul style="list-style-type: none"> • Connect Power Source. (pp. 9, 10) • Insert cassette, window side facing out. (p. 11)
Video cassette cannot be removed ...	<ul style="list-style-type: none"> • Connect Power Source. (pp. 9, 10)
Operation buttons do not work ...	<ul style="list-style-type: none"> • Check for Dew Indication. (p. 48)
Recording cannot be done ...	<ul style="list-style-type: none"> • Make sure record tab is intact. (p. 11) • Check Battery Indicator. (p. 47) • Check for Dew Indication. (p. 48)
Auto Focus does not operate ...	<ul style="list-style-type: none"> • Set FOCUS to AUTO. (p. 24) • Set POWER to CAMERA. (p. 16)
Sound from microphone can't be monitored ...	<ul style="list-style-type: none"> • Set unit to REC or Record/Pause mode.
Camera picture is too dark ...	<ul style="list-style-type: none"> • Set HIGH SPEED SHUTTER to AUTO. (p. 25)
No playback picture, or the playback picture is noisy or contains streaks ...	<ul style="list-style-type: none"> • Press UP ▲/DOWN ▼ button during playback (Tracking Control). (p.20)
"Panasonic ITS TAPES PLAY IN YOUR VCR ..." appears in EVF or LCD Monitor ...	<ul style="list-style-type: none"> • Set POWER to CAMERA, then set SELF DEMO : OFF in MENU screen to cancel Demo mode. (p. 7)
"NO CF CARD" appears in EVF or LCD Monitor ...	<ul style="list-style-type: none"> • Make sure CompactFlash Card is inserted. (p. 34)
Cannot capture the image ...	<ul style="list-style-type: none"> • Set POWER to PHOTO. (p. 35) • No memory remaining. Delete some images before capturing more images.
Cannot playback Still image ...	<ul style="list-style-type: none"> • Set POWER to PHOTO. (p. 36) • Make sure CompactFlash Card is inserted. (p. 34)
"NO PICTURE" appears in EVF or LCD Monitor ...	<ul style="list-style-type: none"> • There are no images in memory.
Top of playback picture waves back and forth excessively ...	<ul style="list-style-type: none"> • A playback signal is not as stable as an off the air TV signal, so the top of your TV screen may appear bent or unstable during playback. This is called, "Horizontal AFC time constant change." To correct, slowly turn the TV horizontal hold control. If your TV does not have this control, or adjusting it does not help, contact your TV service center. (Some nominal service charges may be required.)

Video Head Cleaning



Clogged Video Head

While head cleaning is normally not needed, playing old or damaged tapes may clog the heads. When playback picture resembles example at the left, head cleaning is required.

Ideally, head cleaning should be performed by a qualified service technician. When this is not possible, purchase a head cleaning cassette. Be sure to follow cleaning cassette instructions exactly and only use when symptoms occur.

Before Requesting Service

Self Diagnostic System

If any of the following numbers appear on-screen, the camcorder may have a problem. Do not remove the battery (if attached) and write down the displayed number on below. Then, take the camcorder to a service center for repair.

Error No.	Description
U11	CF Card Error
U12	CF Card Error
U13	CF Card Error
U14	CF Card/Camcorder Dialogue Error
U15	No CF Card Memory
U16	Captured image limit exceeded
U17	Captured image limit exceeded
U30	Error other than above

Request for Service Notice

Please photocopy this form when making a request for service notice.

Request for Service Notice:

In the unlikely event this product needs service.

- Please include your **proof of purchase**.
(Failure to do so will delay your repair.)
- To further speed your repair please provide an explanation of what is wrong with the unit and any symptom it is exhibiting.

Mail this completed form and your Proof of Purchase along with your unit to:
Panasonic Services Company
1705 N. Randall Road
Elgin, IL. 60123-7847
Attn: Camcorder Repair

Please write the displayed Self Diagnostic number here.
(See above)

Limited Warranty

Panasonic Consumer Electronics Company,
Division of Matsushita Electric Corporation of
America, One Panasonic Way Secaucus,
New Jersey 07094

Panasonic Sales Company,
Division of Matsushita Electric of Puerto Rico, Inc.
AVE. 65 de Infantería, Km. 9.5 San Gabriel
Industrial Park Carolina, Puerto Rico 00985

PANASONIC Video Products Limited Warranty

Panasonic Consumer Electronics Company or Panasonic Sales Company (collectively referred to as "the Warrantor") will repair this product with new or refurbished parts, free of charge, in the USA or Puerto Rico, in the event of a defect in materials or workmanship as follows (all time periods commence from the date of the original purchase):

PRODUCT	PARTS	LABOR	SERVICE	CONTACT NUMBER
CAMCORDER	ONE (1) YEAR, EXCEPT CCD IMAGE SENSOR CCD IMAGE SENSOR - SIX (6) MONTHS	NINETY (90) DAYS NINETY (90) DAYS	Carry-In or Mail In	1-800-211-PANA(7262)
VCR	ONE (1) YEAR	NINETY (90) DAYS	Carry-In or Mail In	1-800-211-PANA(7262)
A/V MIXER	ONE (1) YEAR	NINETY (90) DAYS	Carry-In or Mail In	1-800-211-PANA(7262)
MONITOR- VCR Combination	ONE (1) YEAR, EXCEPT CRT CRT - TWO (2) YEARS	NINETY (90) DAYS CRT - NINETY (90) DAYS	Carry-In: 21" CRT and Smaller In-home or carry-in: 22" CRT and Larger	1-800-211-PANA(7262)

Batteries (if included) - New rechargeable batteries in exchange for defective rechargeable batteries for ten (10) days. Non-rechargeable batteries are not warranted.

Tape (if included) - New video cassette tape in exchange for a defective video cassette tape for five (5) days. In-home, carry-in or mail-in service, as applicable, in the USA can be obtained during the warranty period by contacting a Panasonic Services Company (PASC) Factory Servicenter listed in the Service Directory. Or call toll free contact number listed above, to locate an authorized PASC Servicenter. Carry-in or mail-in service in Puerto Rico can be obtained during the warranty period by calling the Panasonic Sales Company telephone number listed in the Servicenter Directory.

This warranty is extended only to the original purchaser. A purchase receipt or other proof of the date of the original purchase is required before warranty service is rendered.

This warranty only covers failures due to defects in materials and workmanship which occur during normal use and does not cover normal maintenance, including, but not limited to, video and audio head cleaning. The warranty does not cover damage which occurs in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, modification, faulty installation, set-up adjustments, improper antenna, inadequate signal pickup, maladjustment of consumer controls, improper operation, power line surge, improper voltage supply, lightning damage, commercial use such as hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than a PASC Factory Servicenter or a PASC authorized Servicenter, or damage that is attributable to acts of God.

LIMITS AND EXCLUSIONS

There are no express warranties except as listed above.

THE WARRANTOR SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGE TO RECORDING MEDIA) RESULTING FROM THE USE OF THIS PRODUCTS, OR ARISING OUT OF ANY BREACH OF THE WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the Consumer Affairs Department at the Panasonic Consumer Electronics Company address above.

SERVICE CALLS WHICH DO NOT INVOLVE DEFECTIVE MATERIALS OR WORKMANSHIP AS DETERMINED BY THE WARRANTOR, IN ITS SOLE DISCRETION, ARE NOT COVERED. COSTS OF SUCH SERVICE CALLS ARE THE RESPONSIBILITY OF THE PURCHASER.

warvid 8/8/2000

For Your Information

Servicenter List

For Product Information, Operating Assistance, Literature Request, Dealer Locations, and all Customer Service inquiries please contact:

1-800-211-PANA(7262), Monday-Friday 9am-9pm Saturday-Sunday 9am-7am, EST.
or send e-mail to : consumerproducts@panasonic.com

Web Site: <http://www.panasonic.com>

You can purchase parts, accessories or locate your nearest servicenter by visiting our Web Site.

Accessory Purchases:

1-800-332-5368 (Customer Orders Only)

Panasonic Services Company 20421 84th Avenue South, Kent, WA 98032

(6 am to 5 pm Monday - Friday; 6 am to 10:30 am Saturday; PST)

(Visa, MasterCard, Discover Card, American Express, Check)

Product Repairs

Centralized Factory Servicenter

MAIL TO :

Panasonic Services Company
1705 N. Randall Road,
Elgin, IL 60123-7847

Attention: Camcorder Repair

Please carefully pack and ship, prepaid and insured, to the Elgin centralized repair Factory Servicenter. While there will be added handling delays, you may bring your unit to one of the following locations who will then forward the unit to Elgin for repair.
Customer's in Puerto Rico, please ship or carry in to location below ("Service in Puerto Rico").

Factory Servicenters Locations

CALIFORNIA

6550 Katella Avenue
Cypress, CA 90630

800 Dubuque Avenue
S. San Francisco
CA 94080

3878 Ruffin Road
Suite A
San Diego, CA 92123

COLORADO

1640 South Abilene
Street Suite D
Aurora, CO 80012

FLORIDA

3700 North 29th Avenue
Suite 102
Hollywood, FL 33020

GEORGIA

8655 Roswell Road
Suite 100
Atlanta, GA 30350

ILLINOIS

9060 Golf Road
Niles, IL 60714

1703 North Randall Road
Elgin, IL 60123
(Pick-up/drop-off only)

MARYLAND

62 Mountain Road
Glen Burnie, MD 21061

MASSACHUSETTS

60 Glacier Drive
Suite G
Westwood, MA 02090

MINNESOTA

7850-12th Avenue South
Airport Business Center
Bloomington, MN 55425

OHIO

2236 Waycross Road
Civic Center Plaza
ForestPark, OH 45240

PENNSYLVANIA

2221 Cabot Blvd. West
Suite B
Langhorne, PA 19047

TENNESSEE

3800 Ezell Road
Suite 806
Nashville, TN 37211

TEXAS

13615 Welch Road
Suite 101
Farmers Branch, TX
75244

WASHINGTON

20425-84th Avenue
South
Kent, WA 98032

HAWAII

99-859 Iwaiwa Street
Aiea, Hawaii 96701
Phone (808) 488-1996
Fax (808) 486-4369

Service in Puerto Rico

Matsushita Electric of Puerto Rico, Inc. Panasonic Sales Company/ Factory Servicenter:
Ave. 65 de Infantería. Km. 9.5 San Gabriel Industrial Park Carolina, Puerto Rico 00985
Phone (787) 750-4300 Fax (787) 768-2910

As of January 2001

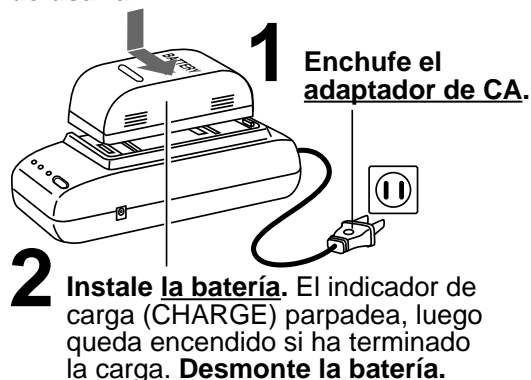
Spanish Quick Use Guide/Guía Para Uso Rápido

Antes de comenzar...

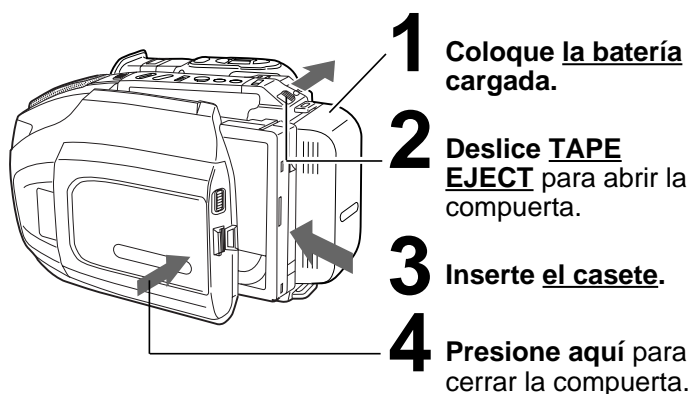
- Inserte un casete con lengüeta para prevención del grabado.

Cargue la batería

Cargue completamente la batería antes de usarla.

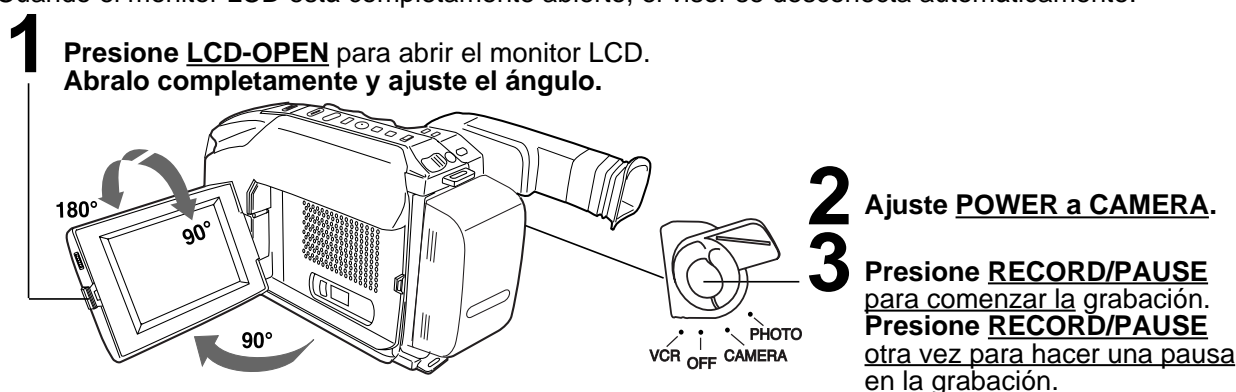


Inserte el casete



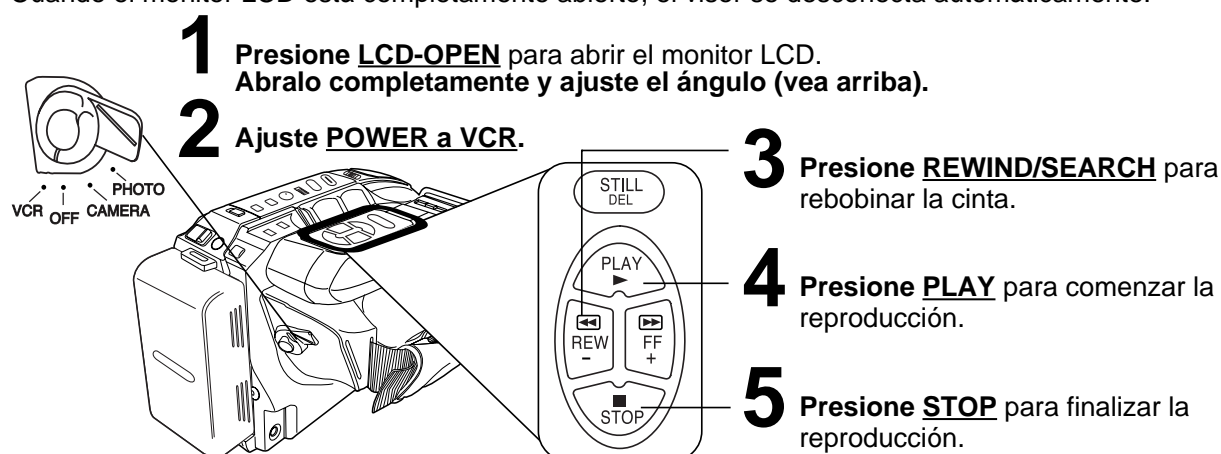
Grabación con la videocámara

Cuando el monitor LCD está completamente abierto, el visor se desconecta automáticamente.



Reproduzca usando el monitor LCD

Cuando el monitor LCD está completamente abierto, el visor se desconecta automáticamente.



Reproduccion con efectos especiales

Para localizar rapidamente una escena especifica

- Oprimir el botón de localización (SEARCH).

Para congelar una imagen

- Oprimir el botón de pausa/imagen fija (PAUSE/STILL).
- Oprimir nuevamente el botón cuando se desea continuar reproduciendo.

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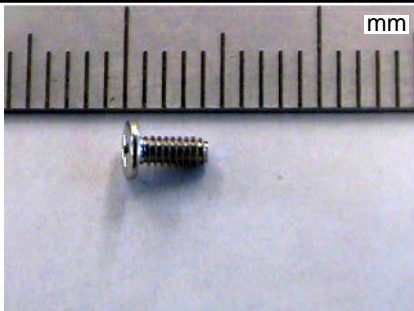
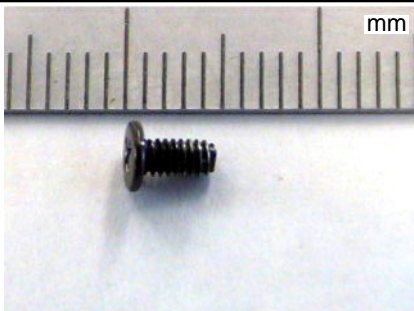
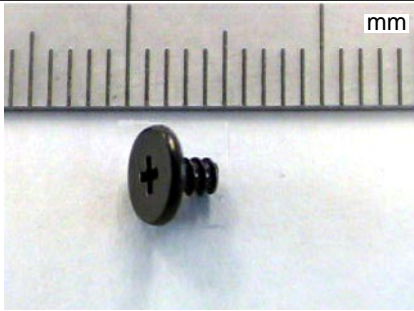
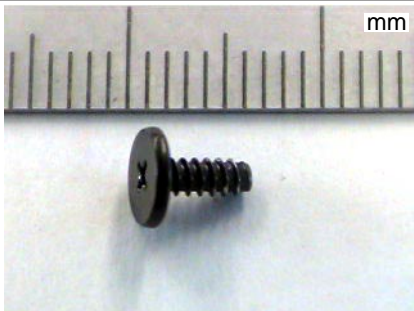
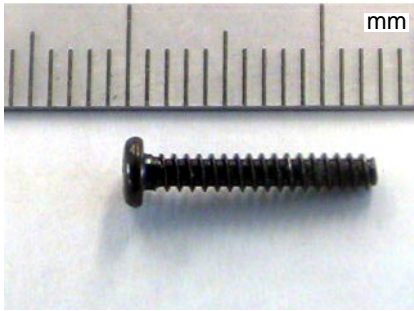
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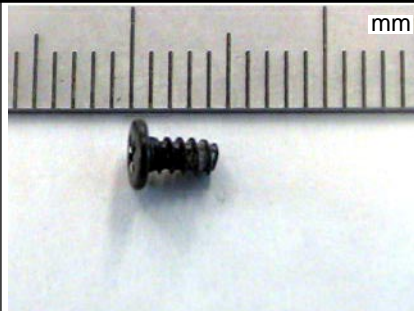
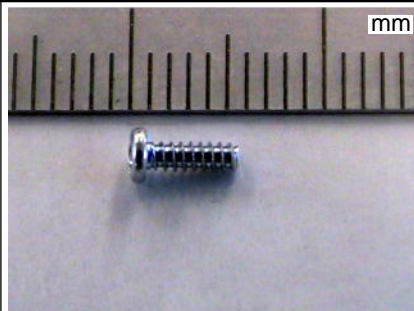
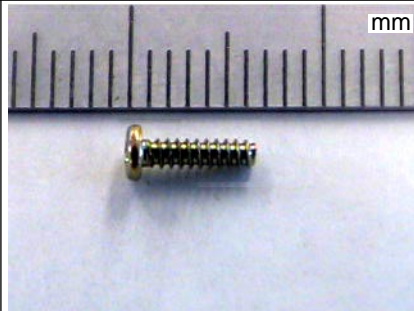

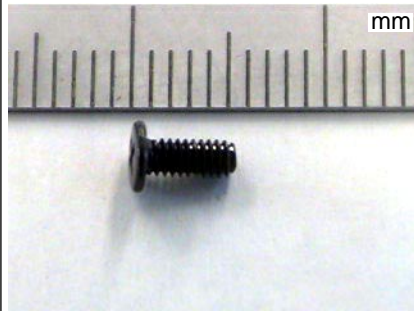
**Panasonic Consumer Electronics
Company, Division of Matsushita
Electric Corporation of America**
One Panasonic Way Secaucus,
New Jersey 07094

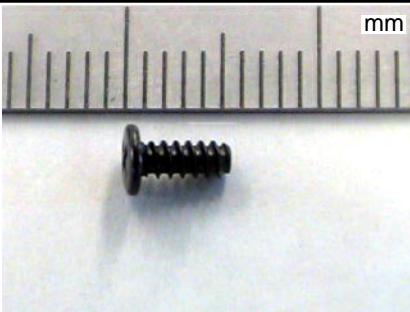
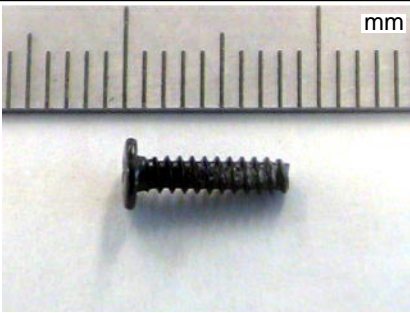
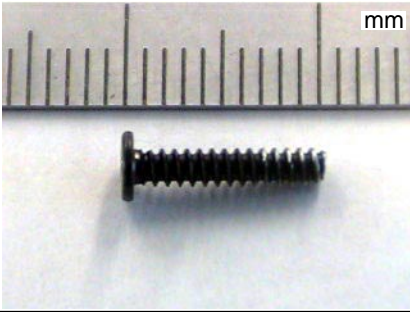
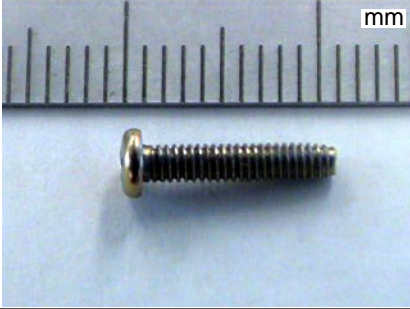
**Panasonic Sales Company ("PSC"),
Division of Matsushita Electric of
Puerto Rico, Inc.**
Ave. 65 de Infanteria, Km. 9.5
San Gabriel Industrial Park
Carolina, Puerto Rico 00985

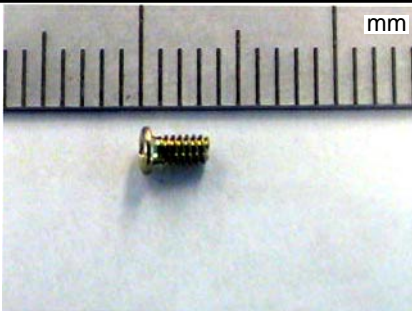

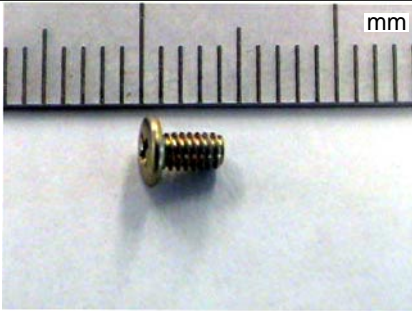
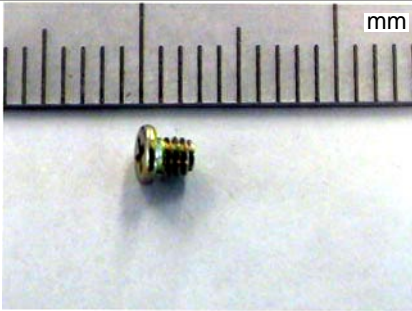
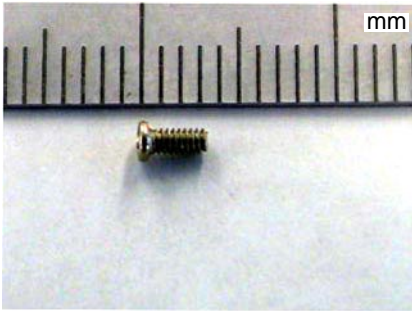


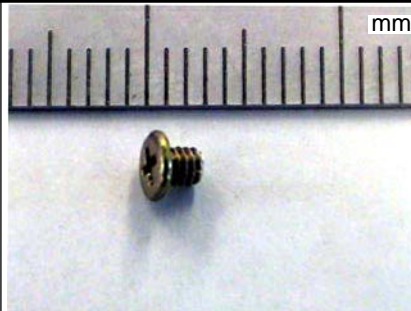
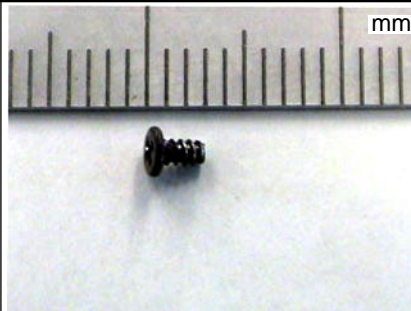

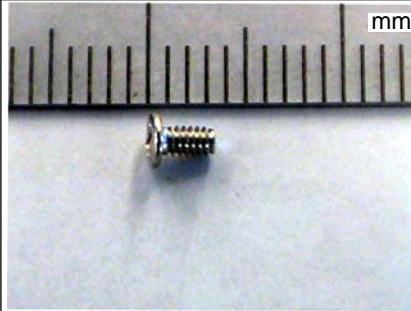
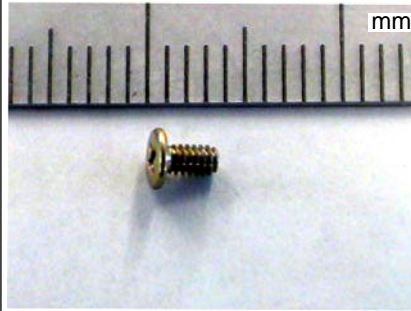
Printed in Indonesia
LSQT0443A
S0201-0

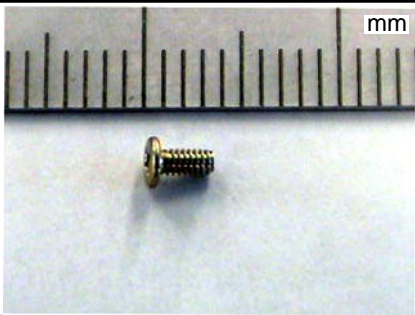
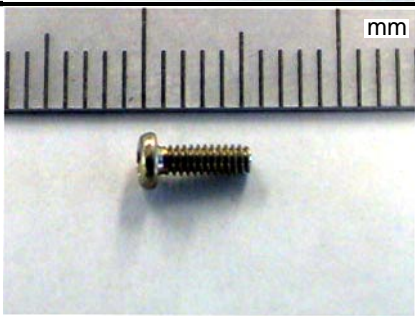
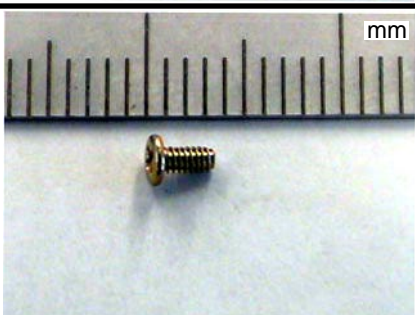
Ref. No.	Side View	Color
④21		Silver
④69		Black
④72		Black
④73		Black
④82		Black

Ref. No.	Side View	Color
④83		Black
⑤01		Silver
⑤02		Gold
⑤04		Gold
⑤33		Black


Ref. No.	Side View	Color
586	 A side view of a black screw with a hexagonal head and a threaded shaft. A ruler is placed above the screw for scale, showing the screw is approximately 10 mm long. The text "mm" is visible on the ruler.	Black
604	 A side view of a black screw with a hexagonal head and a threaded shaft. A ruler is placed above the screw for scale, showing the screw is approximately 10 mm long. The text "mm" is visible on the ruler.	Black
617	 A side view of a black screw with a hexagonal head and a threaded shaft. A ruler is placed above the screw for scale, showing the screw is approximately 10 mm long. The text "mm" is visible on the ruler.	Black
637	 A side view of a gold-colored screw with a hexagonal head and a threaded shaft. A ruler is placed above the screw for scale, showing the screw is approximately 10 mm long. The text "mm" is visible on the ruler.	Gold

Ref. No.	Side View	Color
407		Gold
408		Gold
412		Gold
413		Gold
414		Gold

Ref. No.	Side View	Color
415		Gold
416		Black
417		Gold
423		Silver
628		Gold

Ref. No.	Side View	Color
632		Gold
635		Gold
640		Gold

1. Important safety notice

Components identified by the sign  have special characteristics important for safety. When replacing any of these components. Use only the specified parts.

2. Do not use the part number shown on this drawing for ordering.

The correct part number and part value is shown in the parts list, and may be slightly different or amended since this drawing was prepared.


3. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.

However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information

 :Test point with no test pin.

Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes

The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

Example:

(6.2V).....Zener Voltage

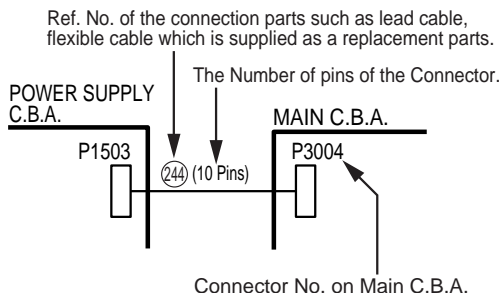
2. How to identify Connectors

Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to, in other words, its counter part.

Use the interconnection schematic diagram to find the connection between associated connectors.

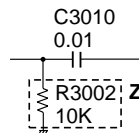
Example:

The connections between C.B.A.s are shown below.



3. Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

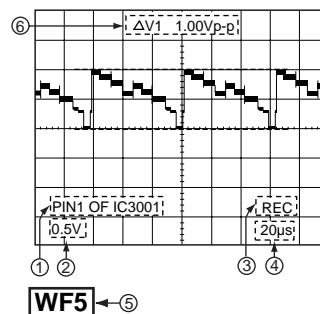
Example:



4. The part number shown on this drawing is only main part number, except for safety parts. Be sure to make your orders of replacement parts according to the parts list.

Signal Waveform Note

How to read Signal Waveform



- ① Connecting Point
- ② Volts/Div
- ③ Operation Mode of VCR
- ④ Time/Div
- ⑤ Waveform Point on Schematic
- ⑥ ΔV1:Peak to Peak

Voltage Chart Note

Voltage Measurement

- a. Color bar signal in SP mode.
- b. ---:Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.

For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:

Circuit Board Layout includes components which are not used.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z

Note : Refer to item 3 of Schematic Diagram Notes for mark "Z".

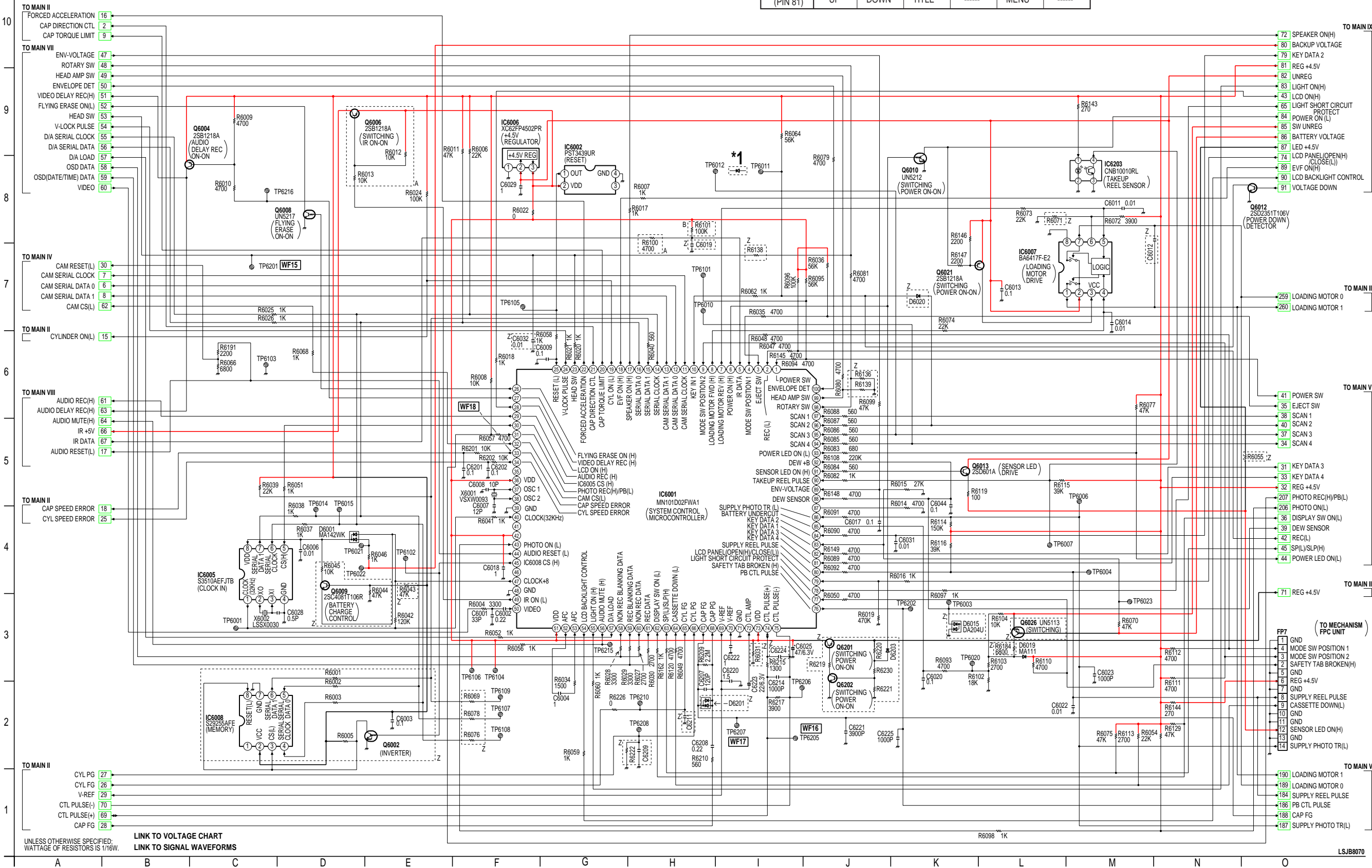
MAIN I (SYSTEM CONTROL/ SERVO) SCHEMATIC DIAGRAM

*1 NOTE
TO DEFEAT THE SAFETY FUNCTION, CONNECT A DIODE BETWEEN TP6011 AND TP6012, OR SELECT THE H. SAFETY DEFEAT IN SERVICE MODE. REFER TO NOTE1 OF "EXTENSION CABLES FOR SERVICE" IN SERVICE NOTES SECTION FOR MORE INFORMATION.

IC6001 KEY MATRIX CHART						
VOLTAGE	0~0.18V	0.72~1.08V	1.62~1.98V	2.52~2.88V	3.42~3.78V	4.32~4.50V
KEY DATA 2 (PIN 84)	STOP	PLAY	FF/SEARCH	REW/SEARCH	STILL	-----
KEY DATA 3 (PIN 82)	LIGHT (ON)	LIGHT (AUTO)	-----	-----	-----	LIGHT (OFF)
KEY DATA 4 (PIN 81)	UP	DOWN	TITLE	-----	MENU	-----

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

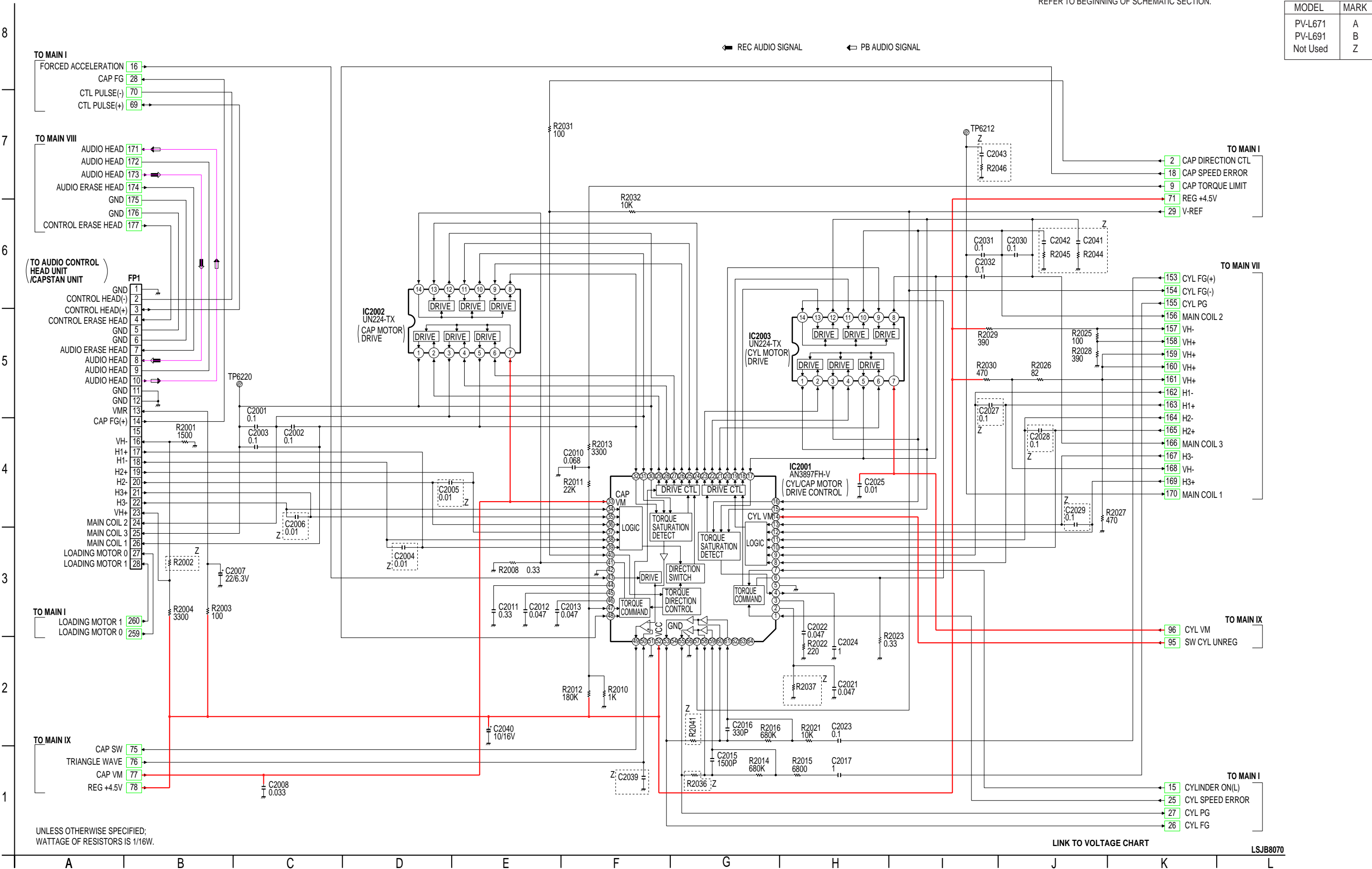
COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



MAIN II (CYLINDER / CAPSTAN DRIVE) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z

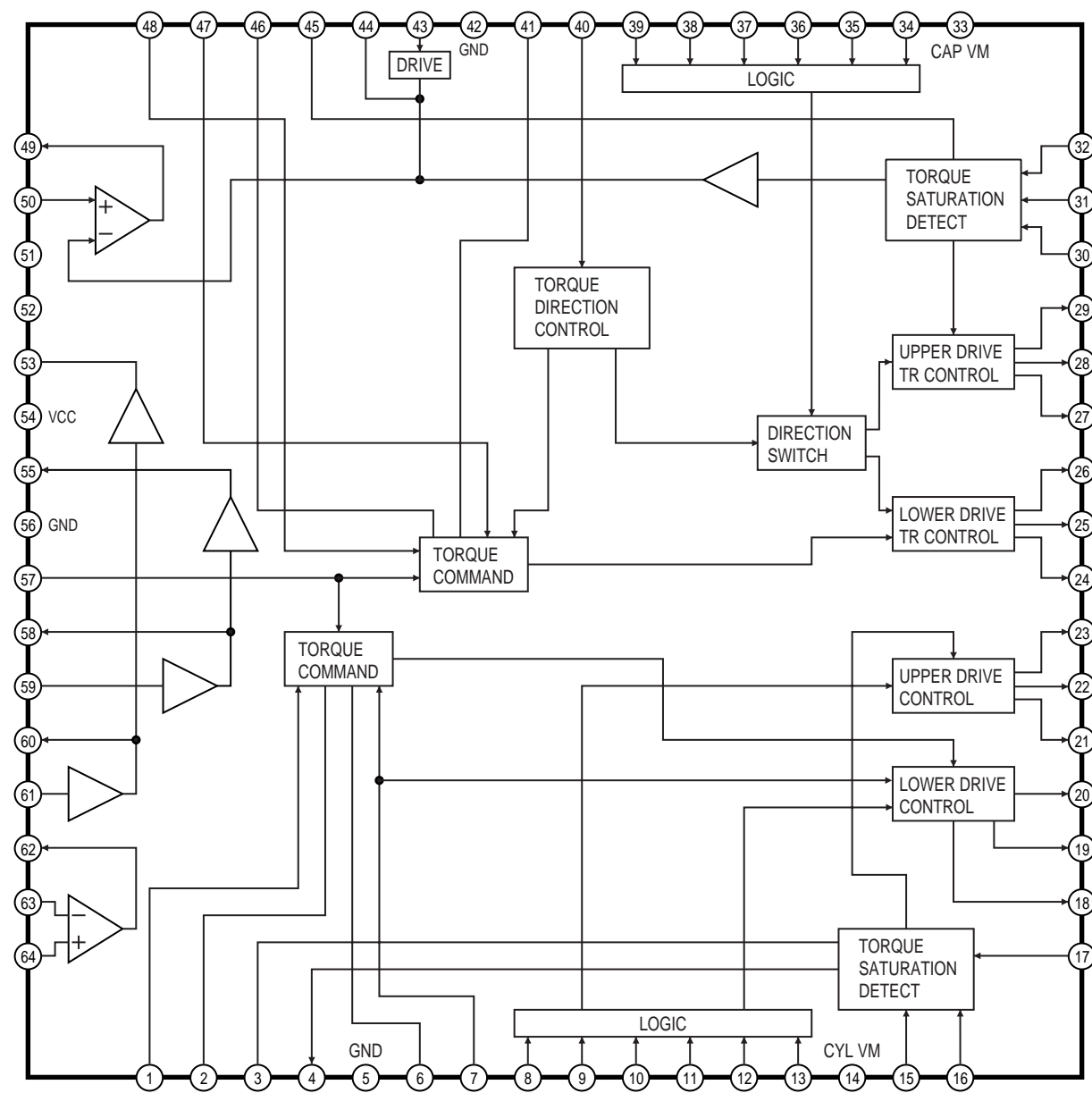


UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/16W.

LINK TO VOLTAGE CHART

LSJB8070

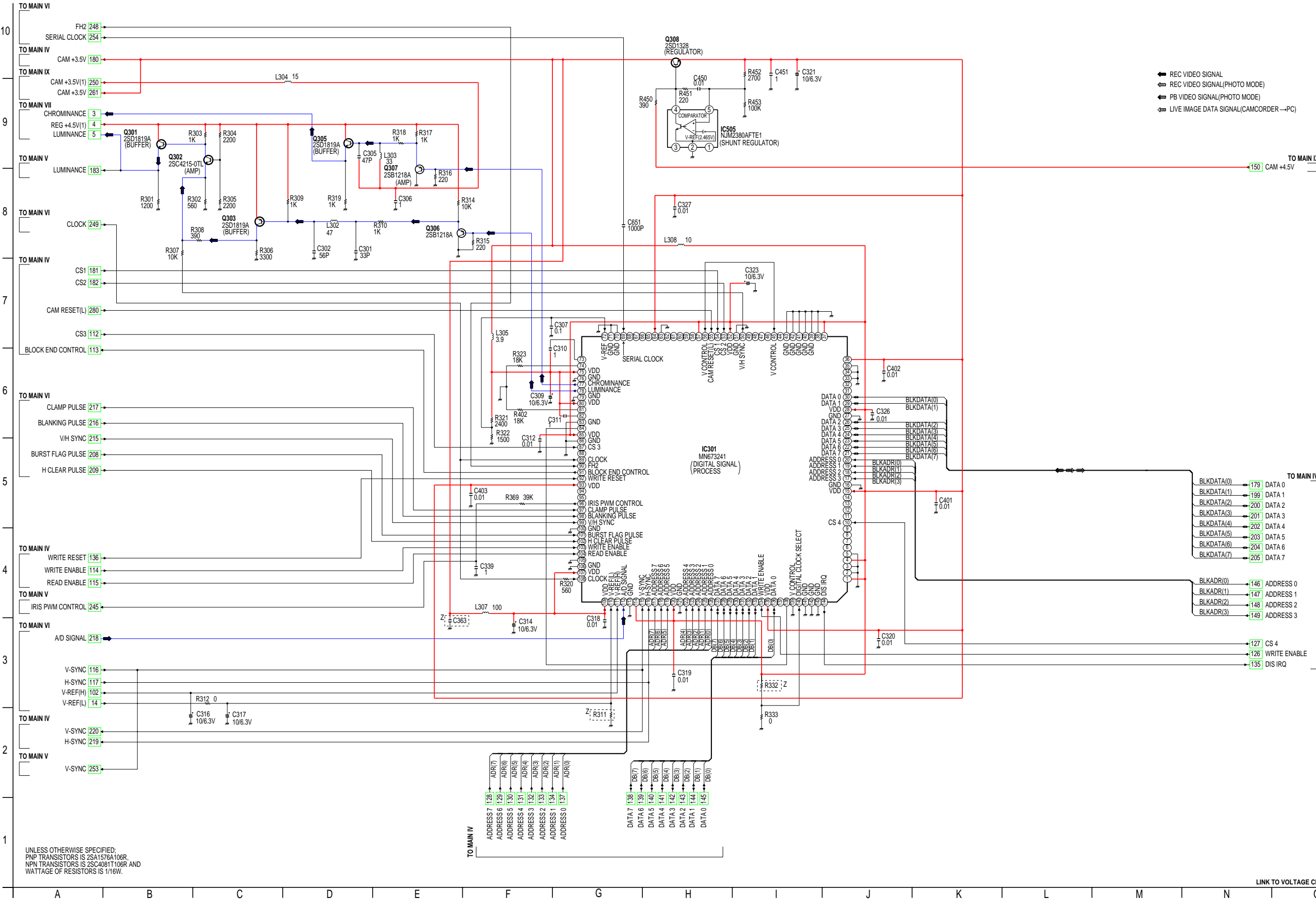
IC2001 CYLINDER/CAPSTAN MOTOR DRIVE CONTROL IC-DETAIL BLOCK DIAGRAM, AN3897FH-V



MAIN III (CAMERA I) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS IS 2SA1576A106R,
NPN TRANSISTORS IS 2SC4081T106R AND
WATTAGE OF RESISTORS IS 1/16W.

A vertical axis with tick marks and labels 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

TERMINAL VOLTAGE	0- 0.14V	0.71- 0.99V	1.56- 1.84V	2.41- 2.69V	3.36- 3.64V
OPERATION BUTTON	EIS	DIGITAL ZOOM	STILL /STROBE	HSS	----
	----	----	BACK LIGHT	FADE	----

PC JACK C.B.A.

PC JACK

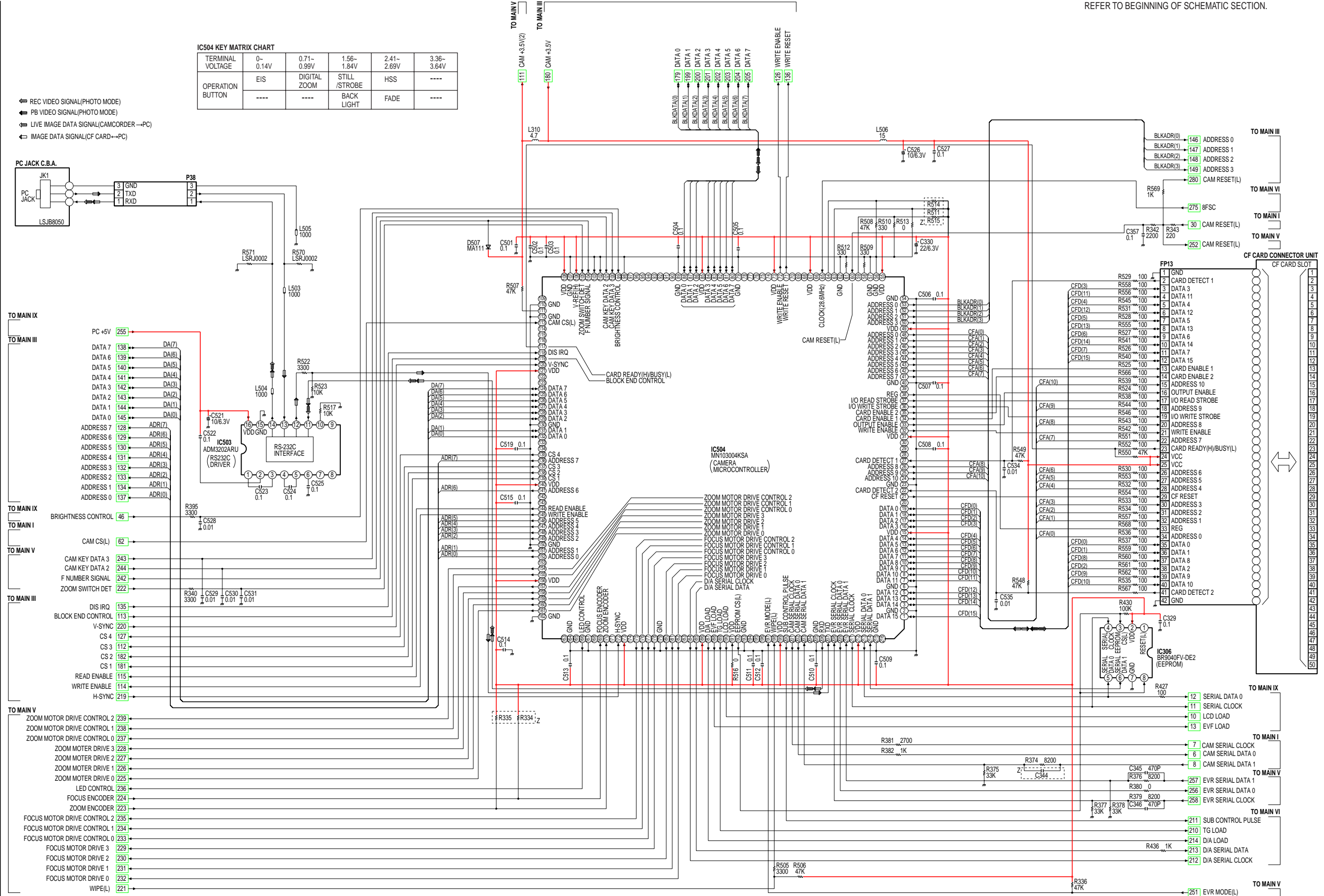
JK1

LSJB8050

3 GND

2 TXD

1 RXD

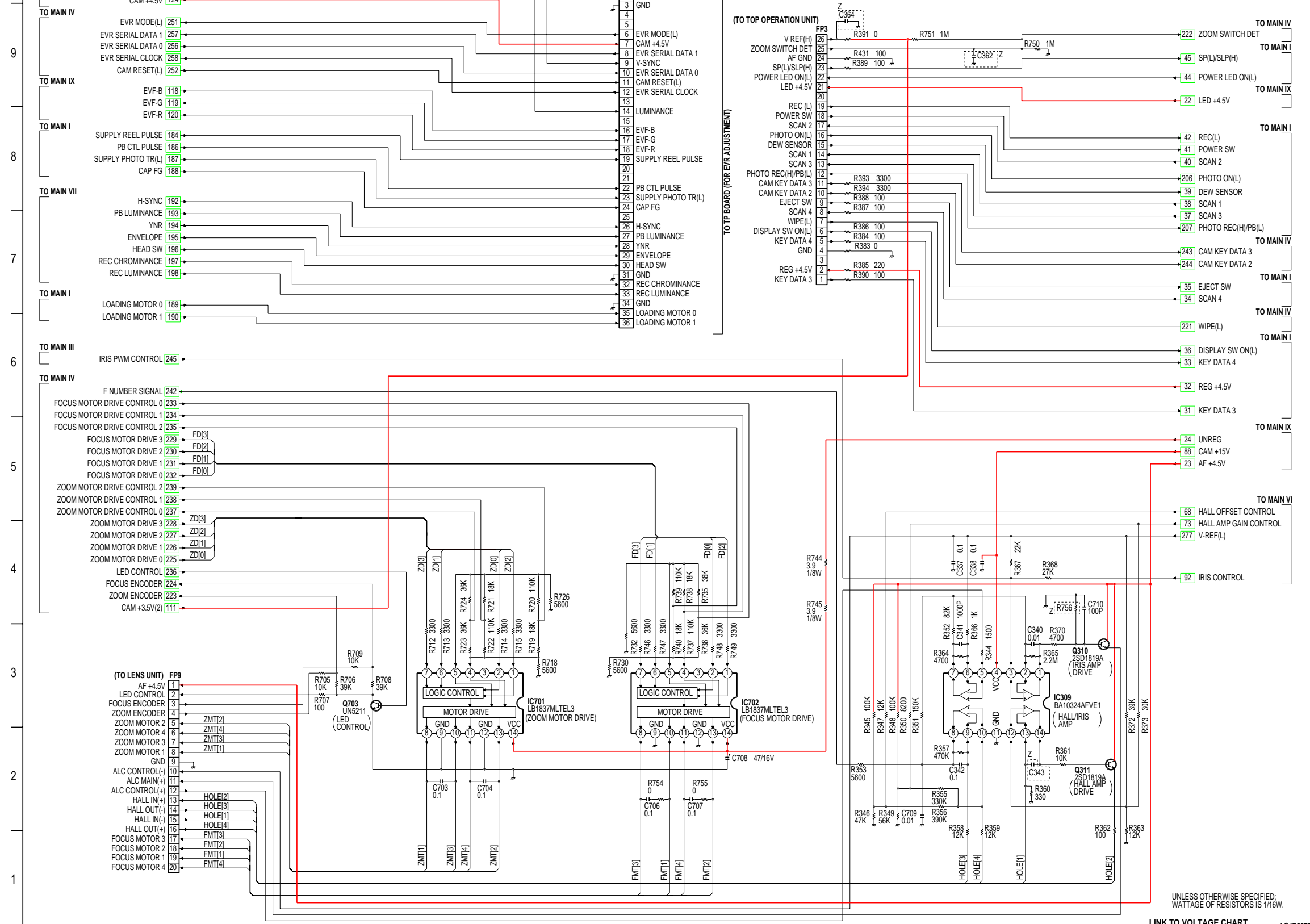


LINK TO VOLTAGE CHART

LSJB8070

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z

MODEL	MARK
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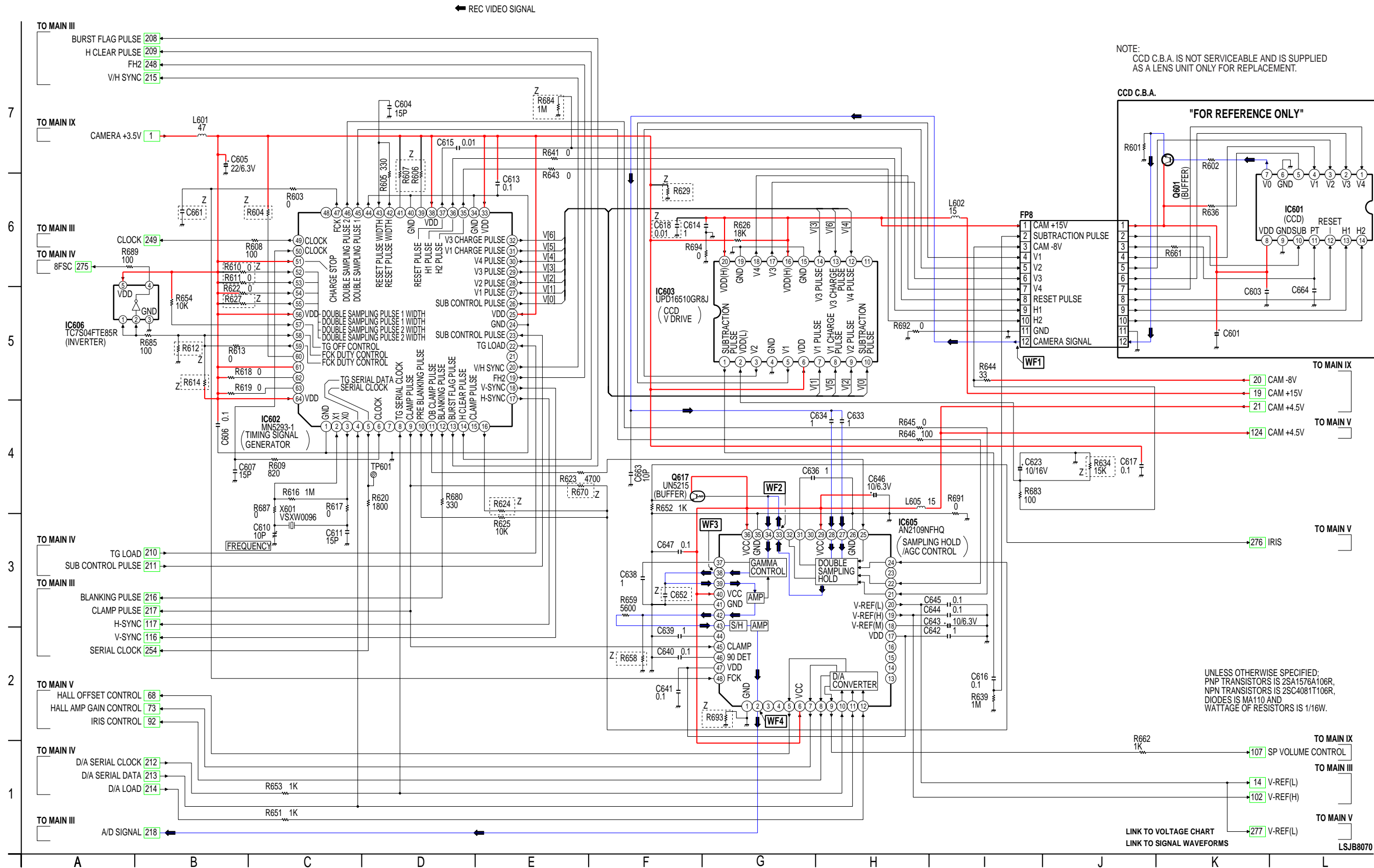


TO VOLTAGE CHART

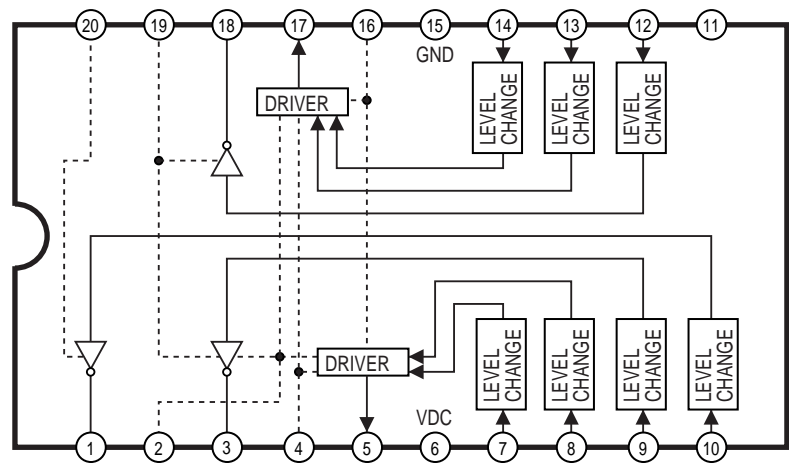
MAIN VI (CCD DRIVE) / CCD SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

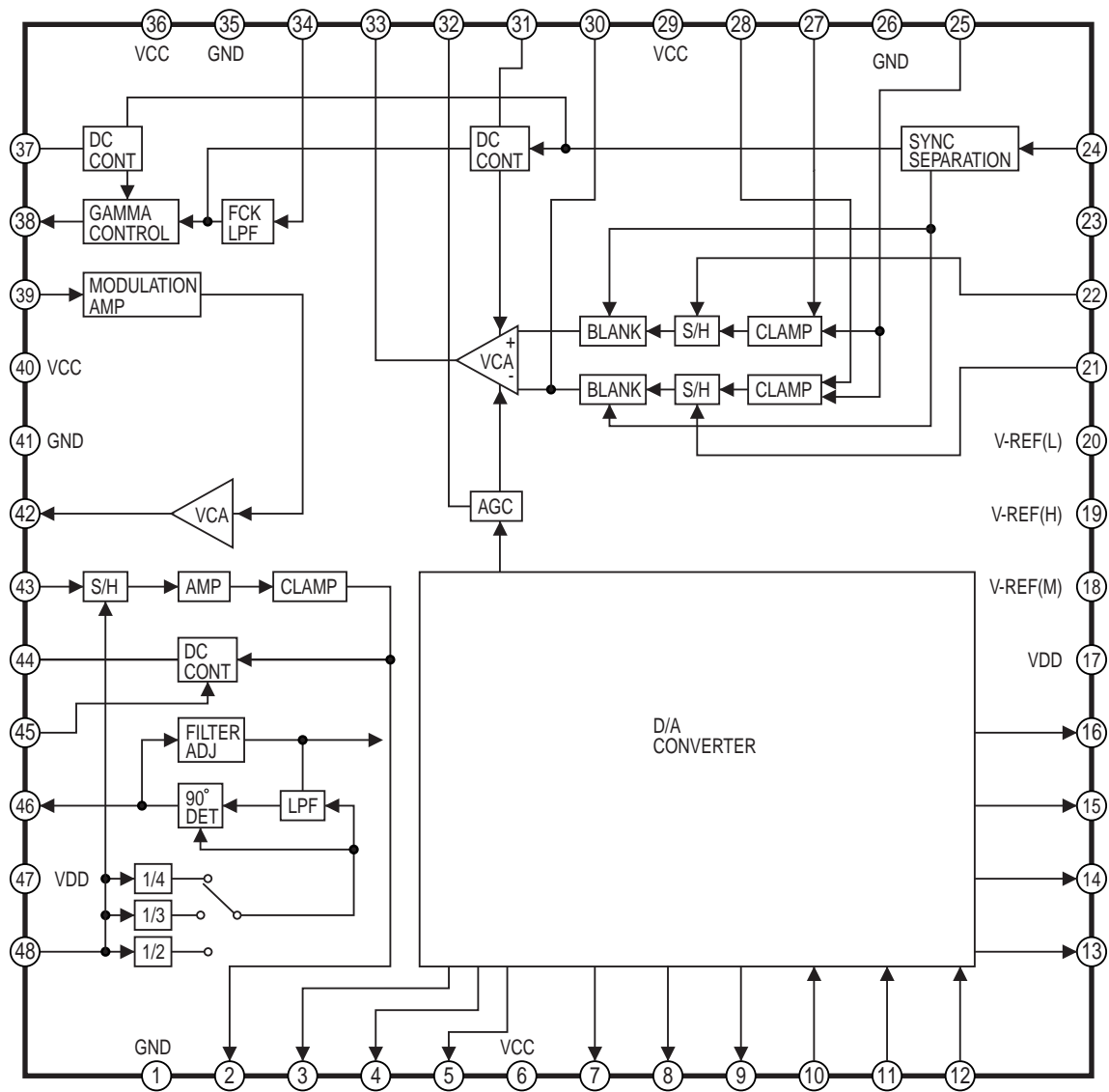
MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



IC603 CCD V DRIVE IC-DETAIL BLOCK DIAGRAM, UPD16510GR8J



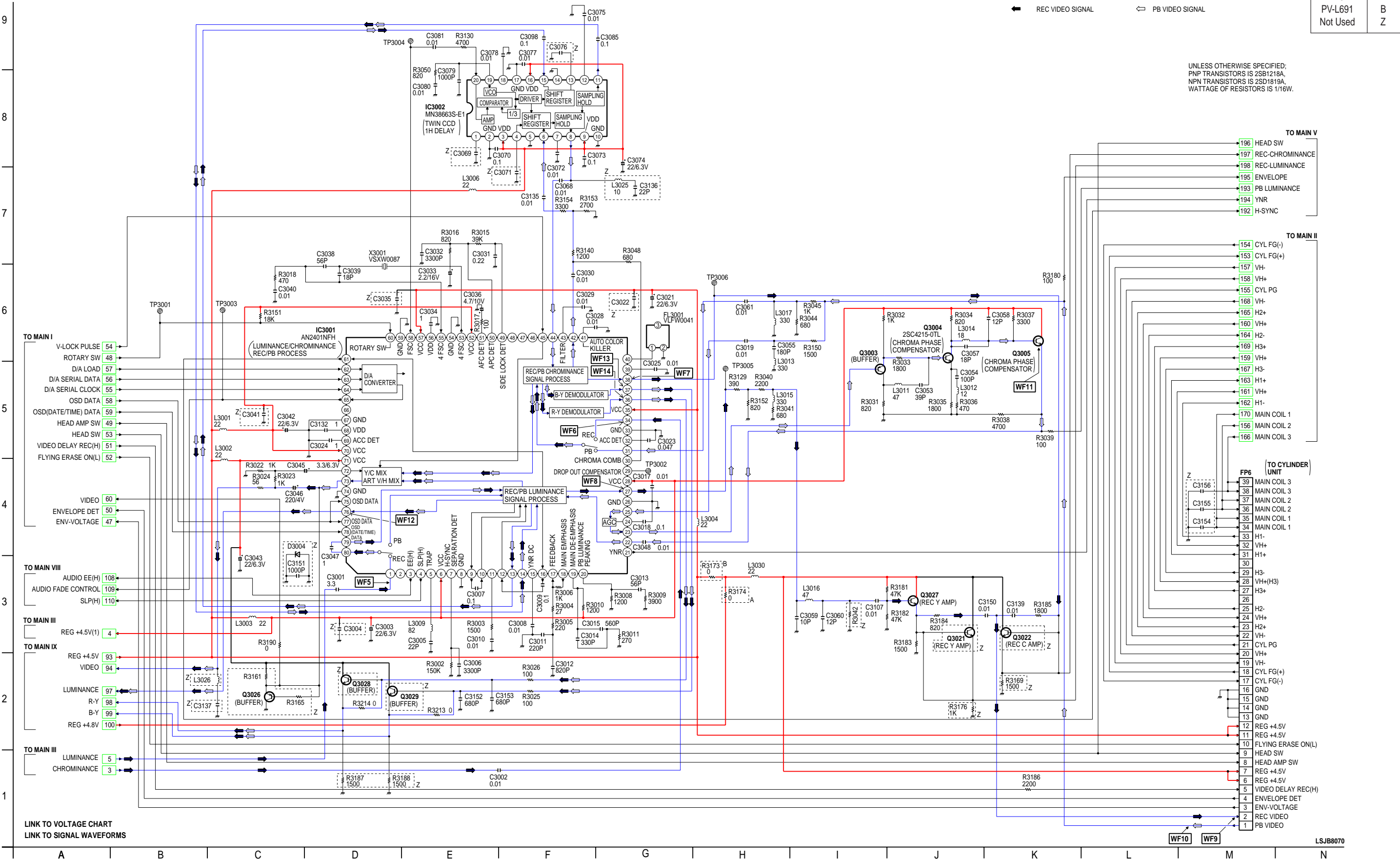
IC605 SAMPLING HOLD/AGC CONTROL IC-DETAIL BLOCK DIAGRAM, AN2109NFHQ



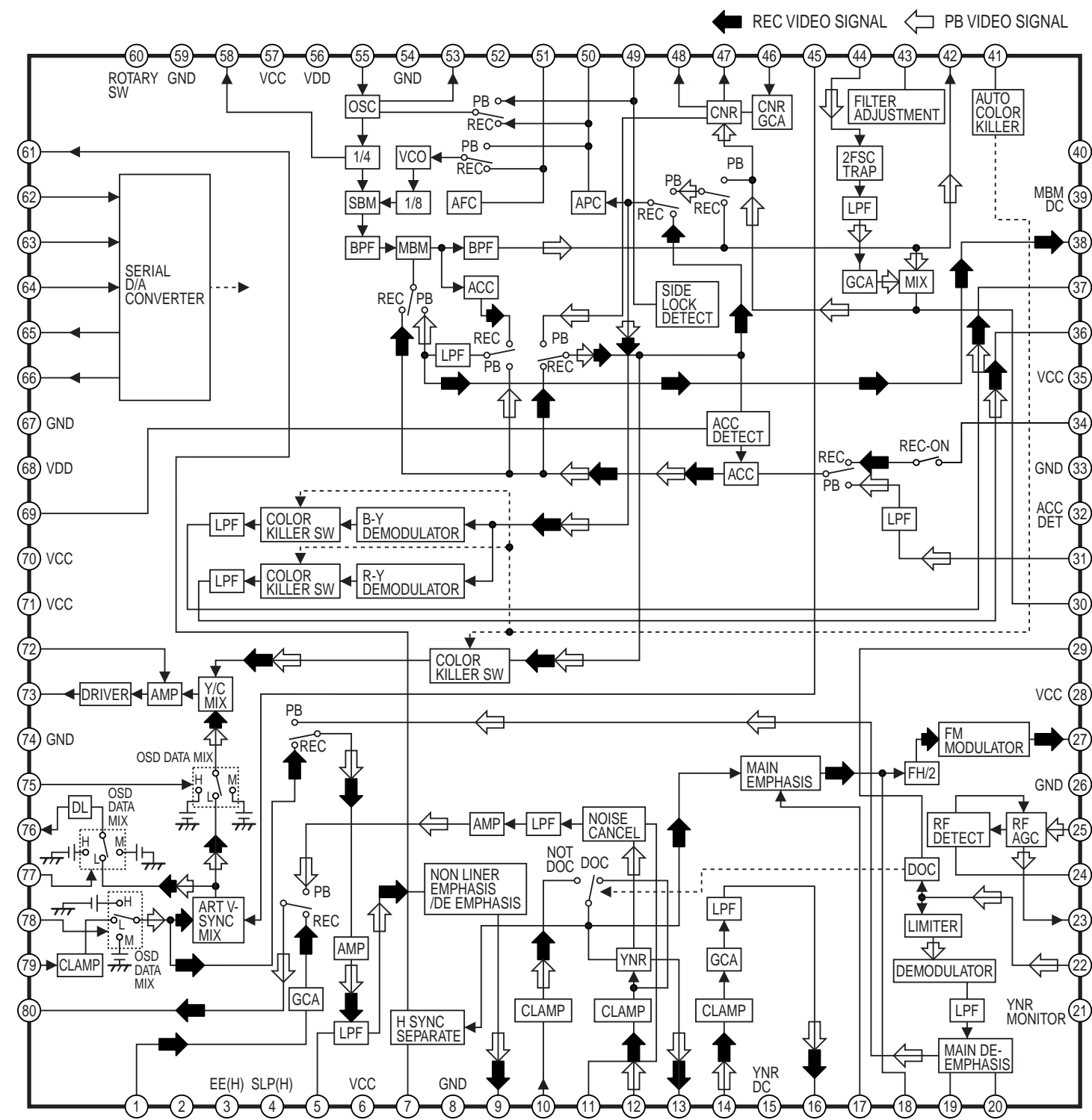
MAIN VII (VIDEO) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



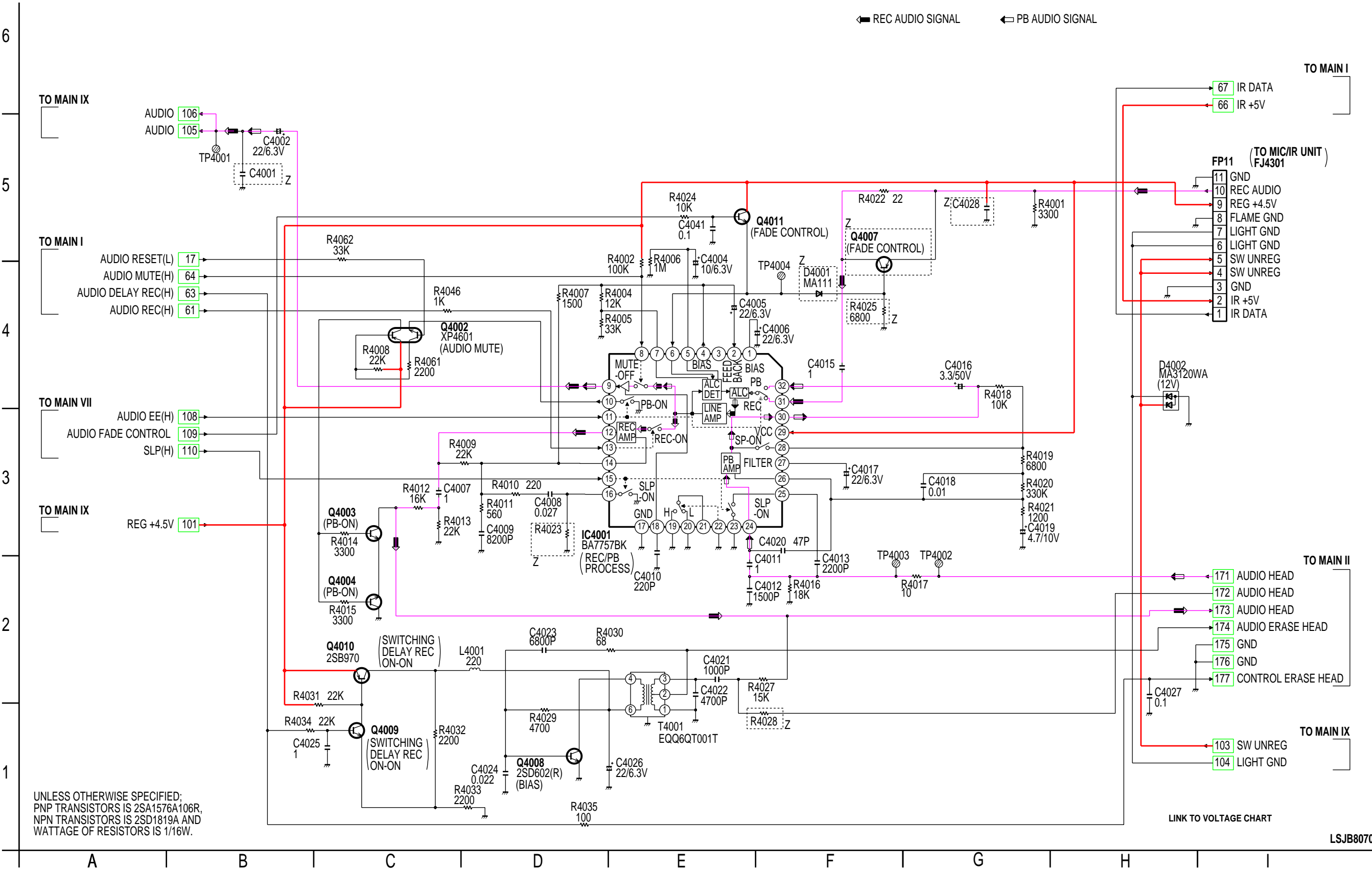
IC3001 VIDEO/AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN2401NFH



MAIN VIII (AUDIO) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



MAIN IX (POWER SUPPLY) SCHEMATIC DIAGRAM

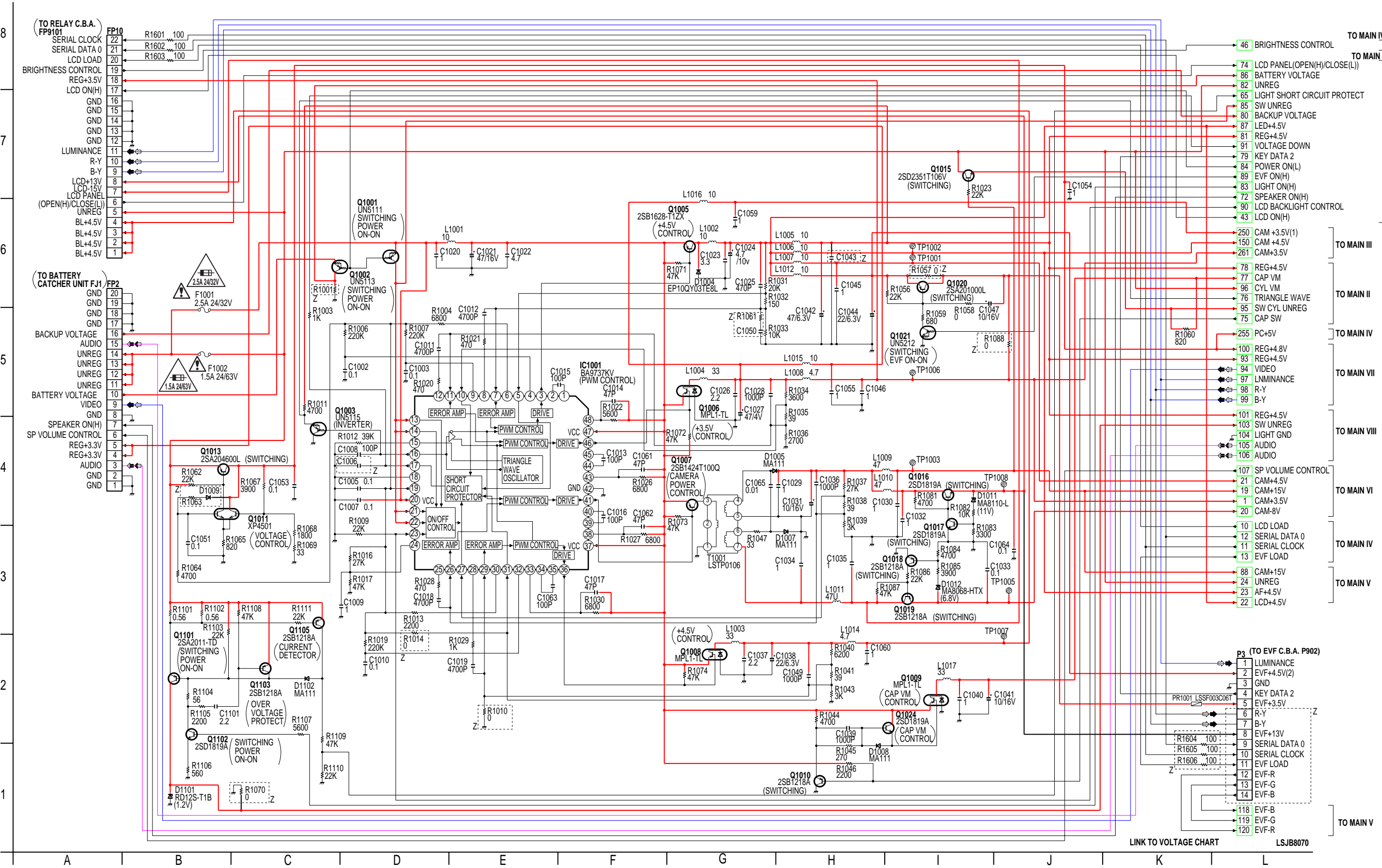
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.5A 24/63V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 1.5A 24/63V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 2.5A 24/32V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 2.5A 24/32V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z

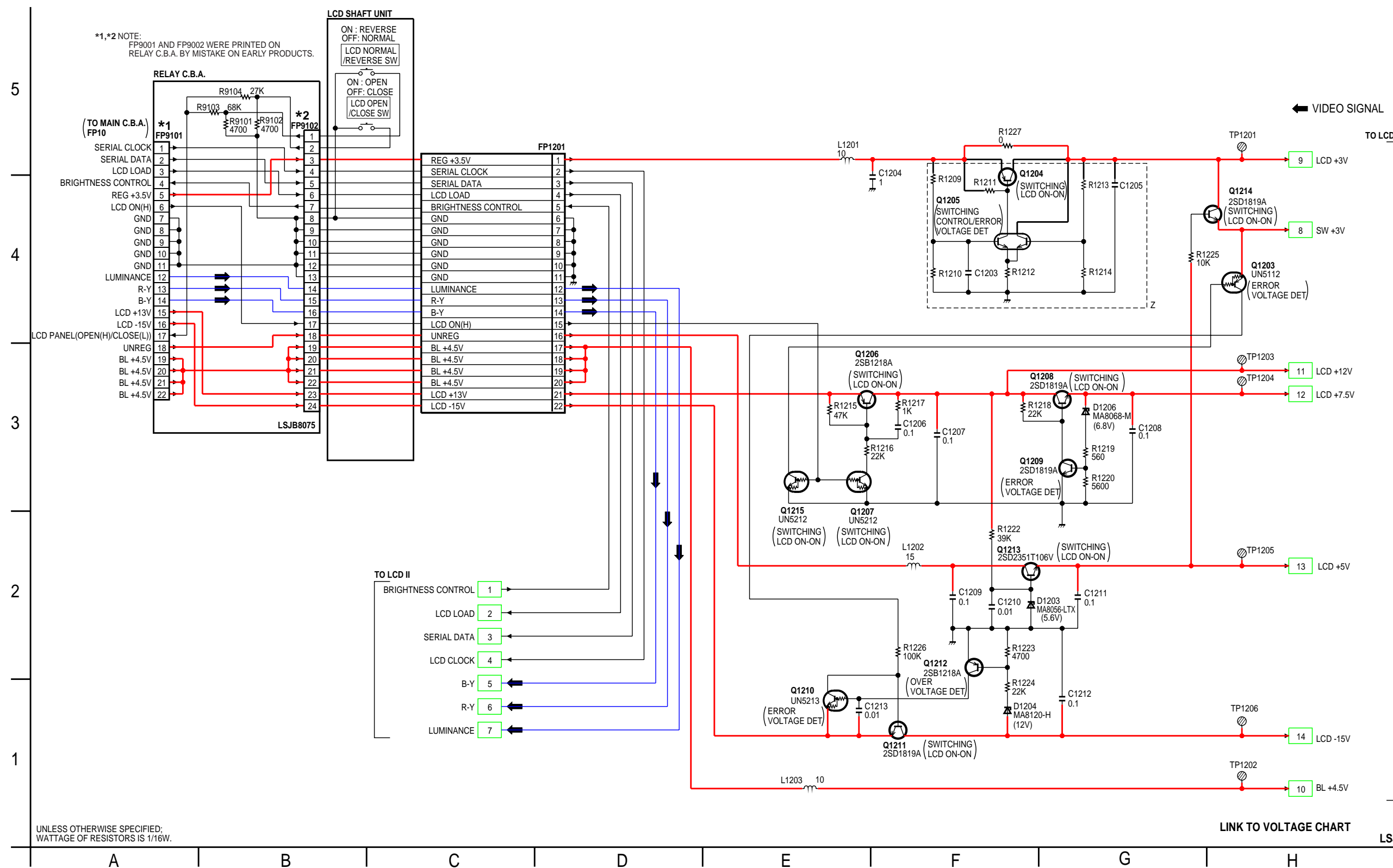


LCD I (LCD POWER) / RELAY SCHEMATIC DIAGRAM

NOTE:
LCD SHAFT UNIT IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z



LINK TO VOLTAGE CHART

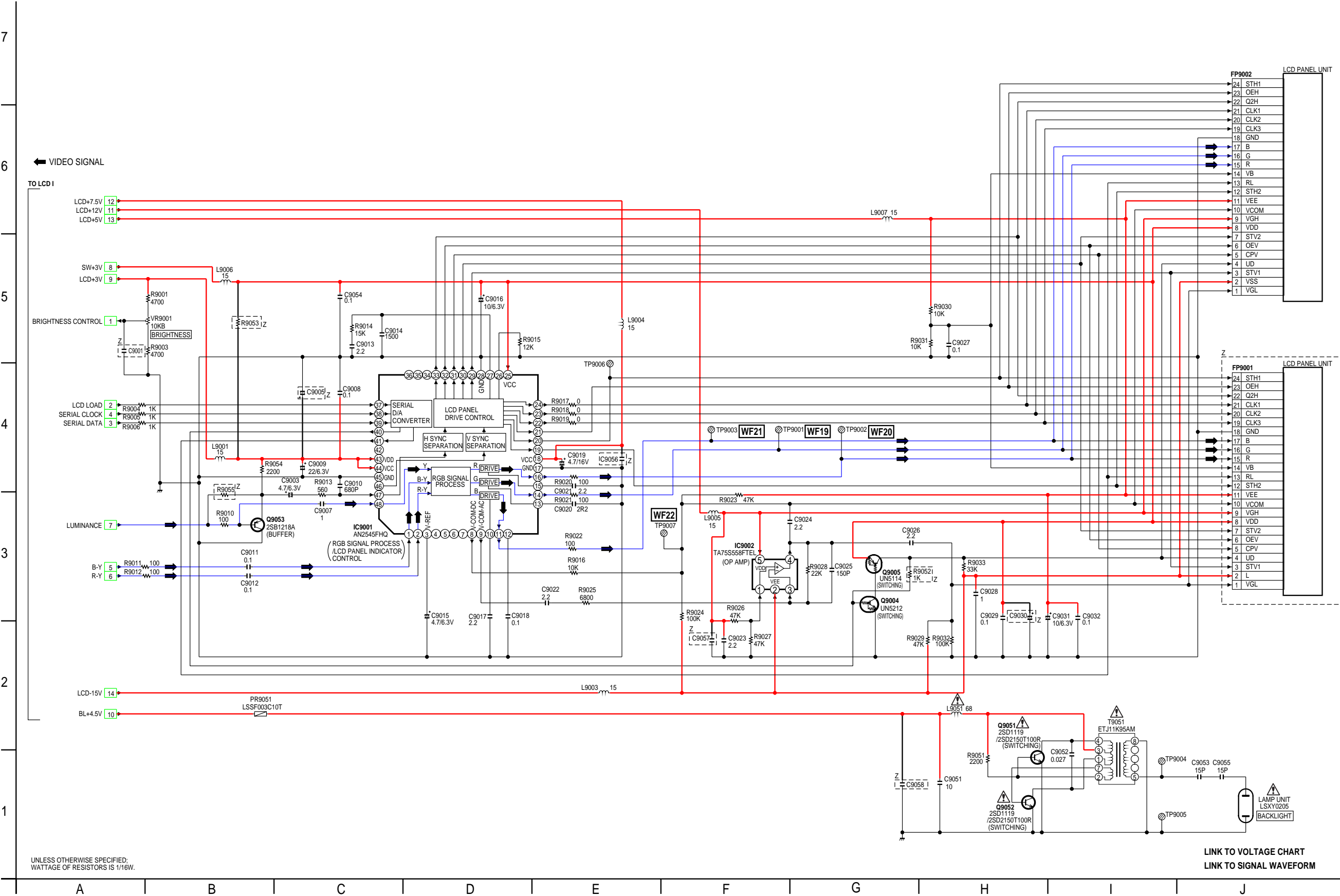
LSJB8118

LCD II (LCD DRIVE) SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

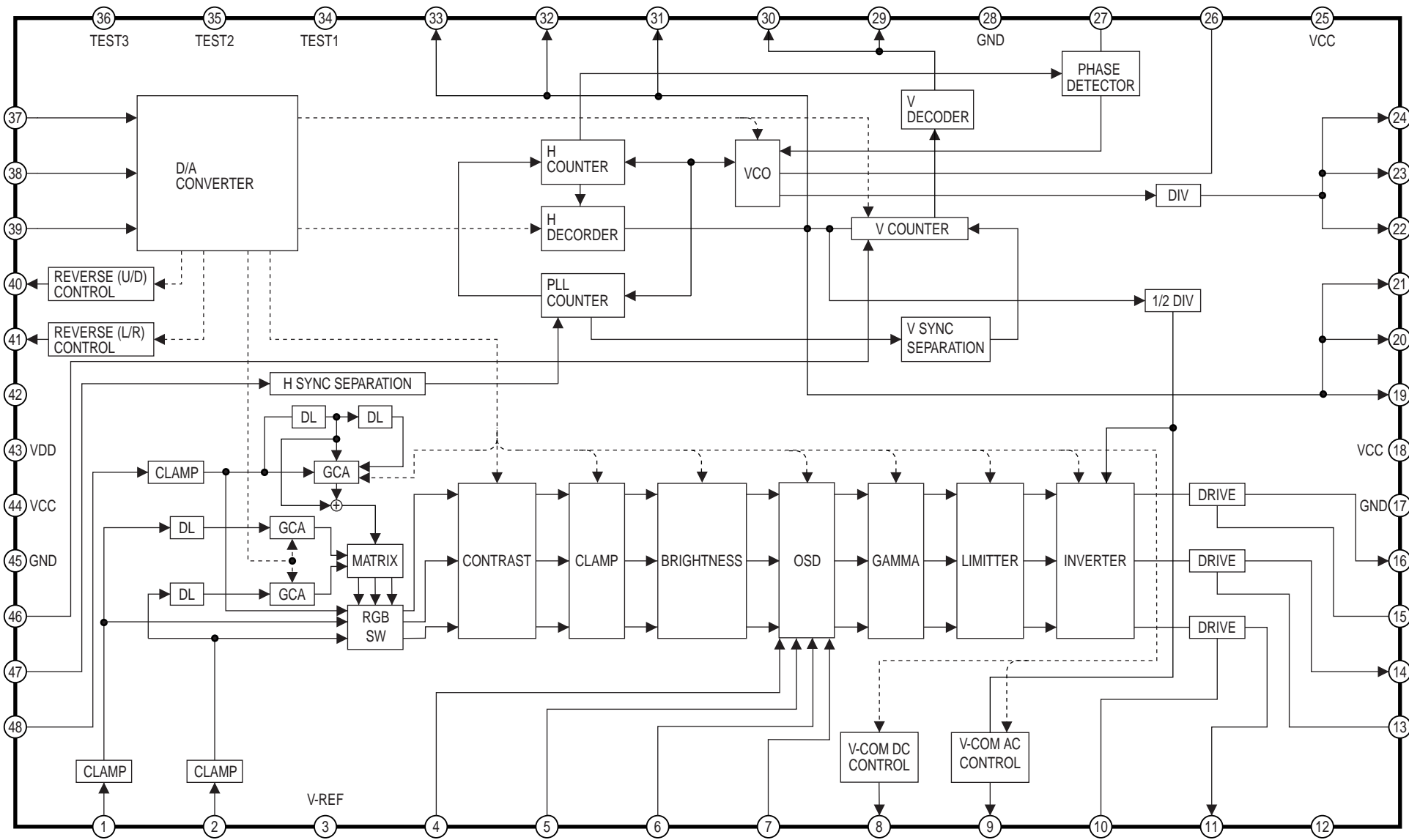
COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z




UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS IS 1/16W.

LINK TO VOLTAGE CHART
LINK TO SIGNAL WAVEFORM

IC9001 RGB SIGNAL PROCESS/LCD PANEL INDICATOR CONTROL IC-DETAIL BLOCK DIAGARM, AN2545FHQ



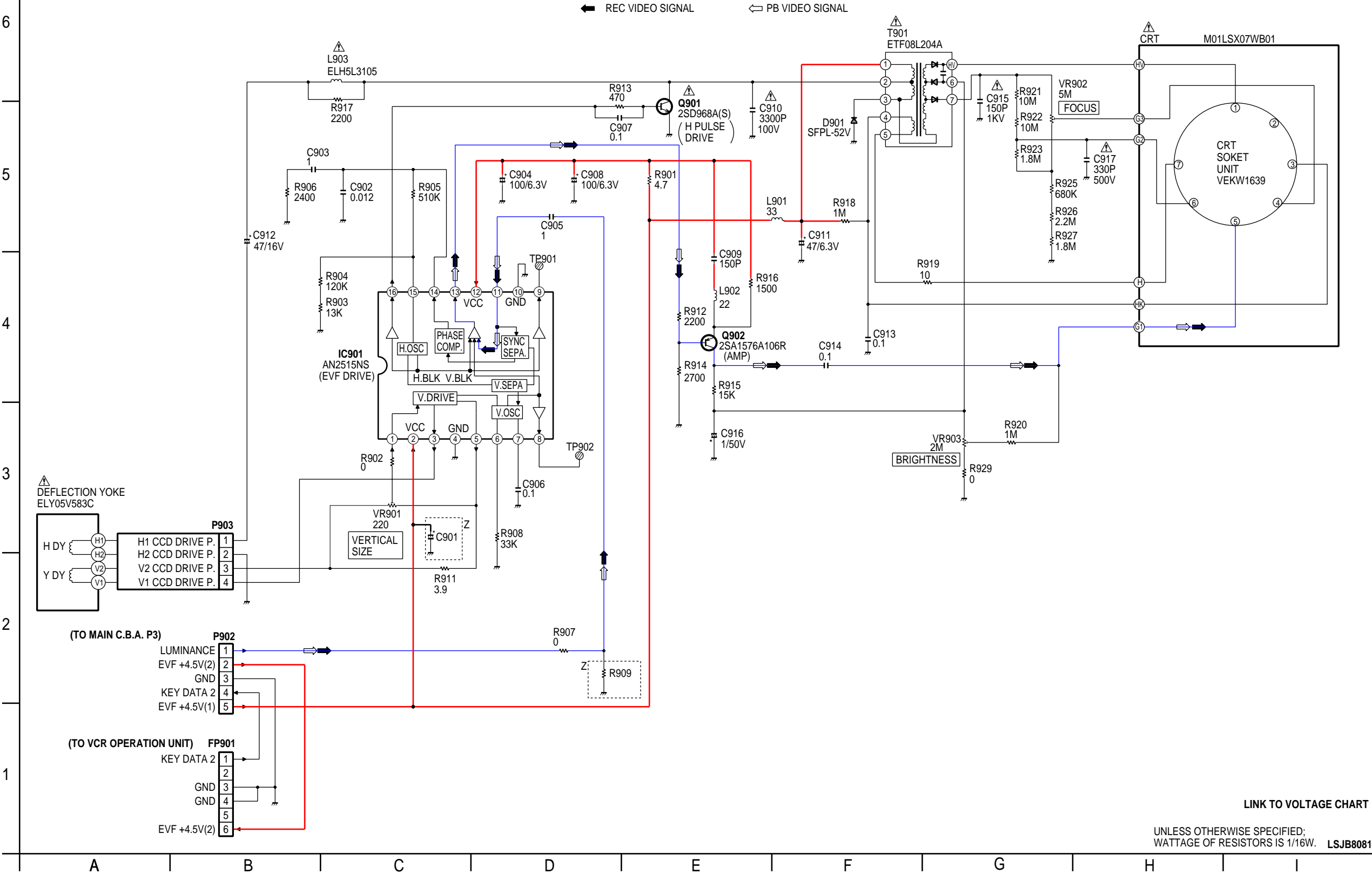
EVF SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-L671	A
PV-L691	B
Not Used	Z

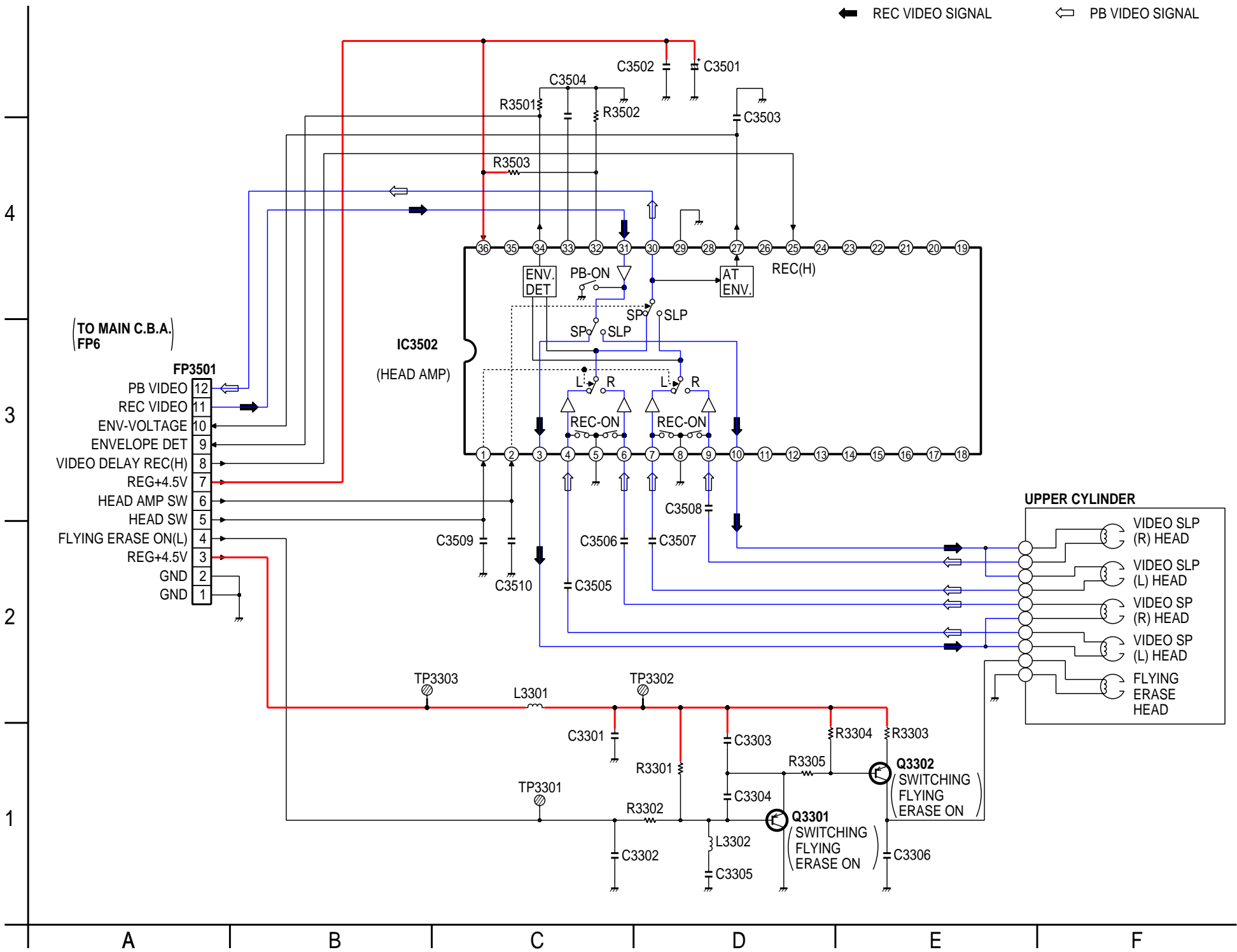


HEAD AMP SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

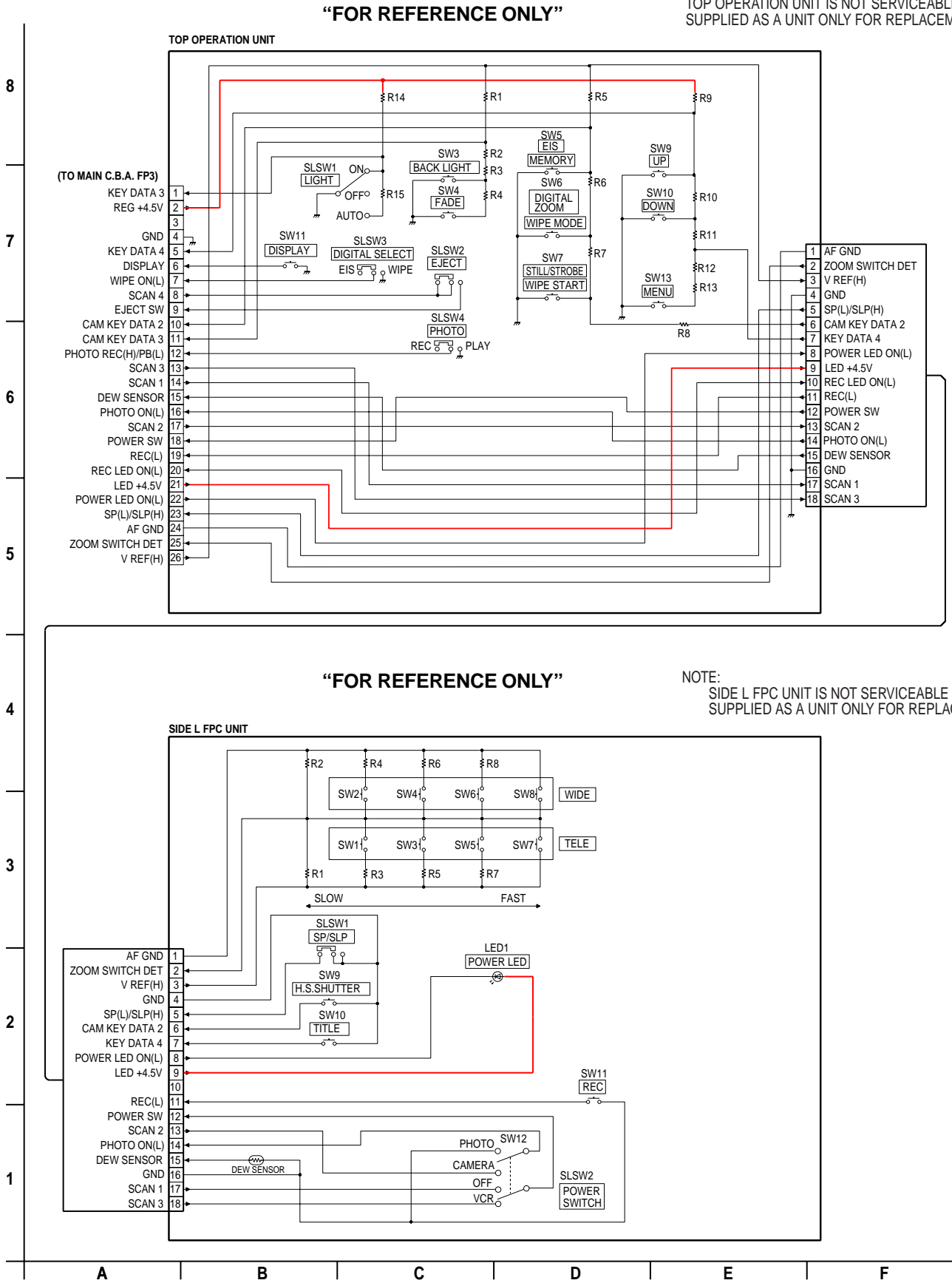
“FOR REFERENCE ONLY”

NOTE:
HEAD AMP IS NOT SERVICEABLE AND IS
SUPPLIED AS A CYLINDER UNIT ONLY FOR REPLACEMENT.



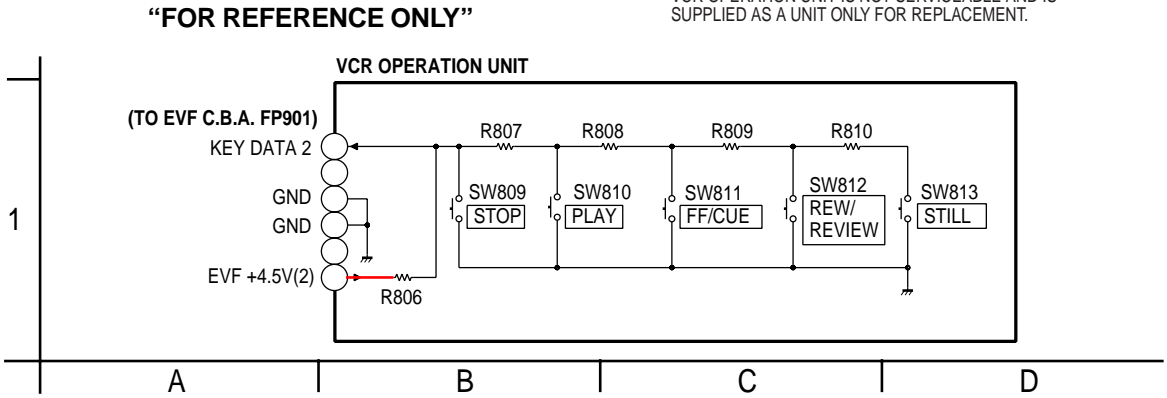
TOP OPERATION UNIT/SIDE L FPC UNIT

NOTE:
TOP OPERATION UNIT IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



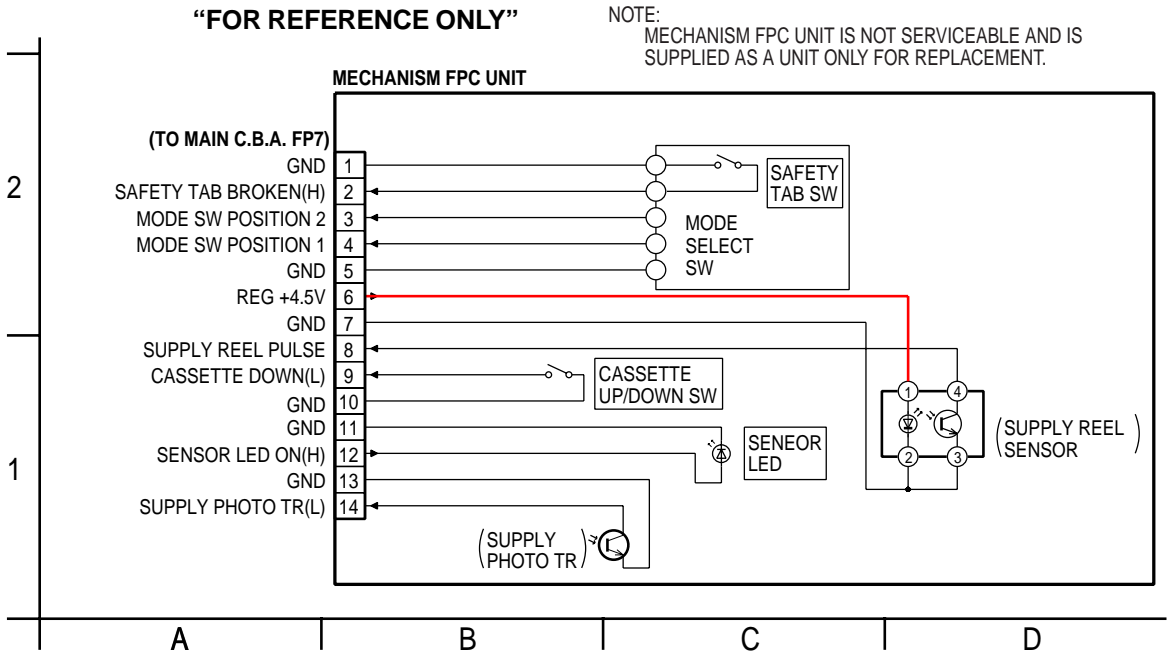
VCR OPERATION UNIT

NOTE:
VCR OPERATION UNIT IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



MECHANISM FPC UNIT

NOTE:
MECHANISM FPC UNIT IS NOT SERVICEABLE AND IS
SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



MIC/IR UNIT

“FOR REFERENCE ONLY”

“FOR REFERENCE ONLY”

[illegible]

TO MAIN
C.B.A. FP2

REC VIDEO SIGNAL PB VIDEO SIGNAL REC AUDIO SIGNAL PB AUDIO SIGNAL

4

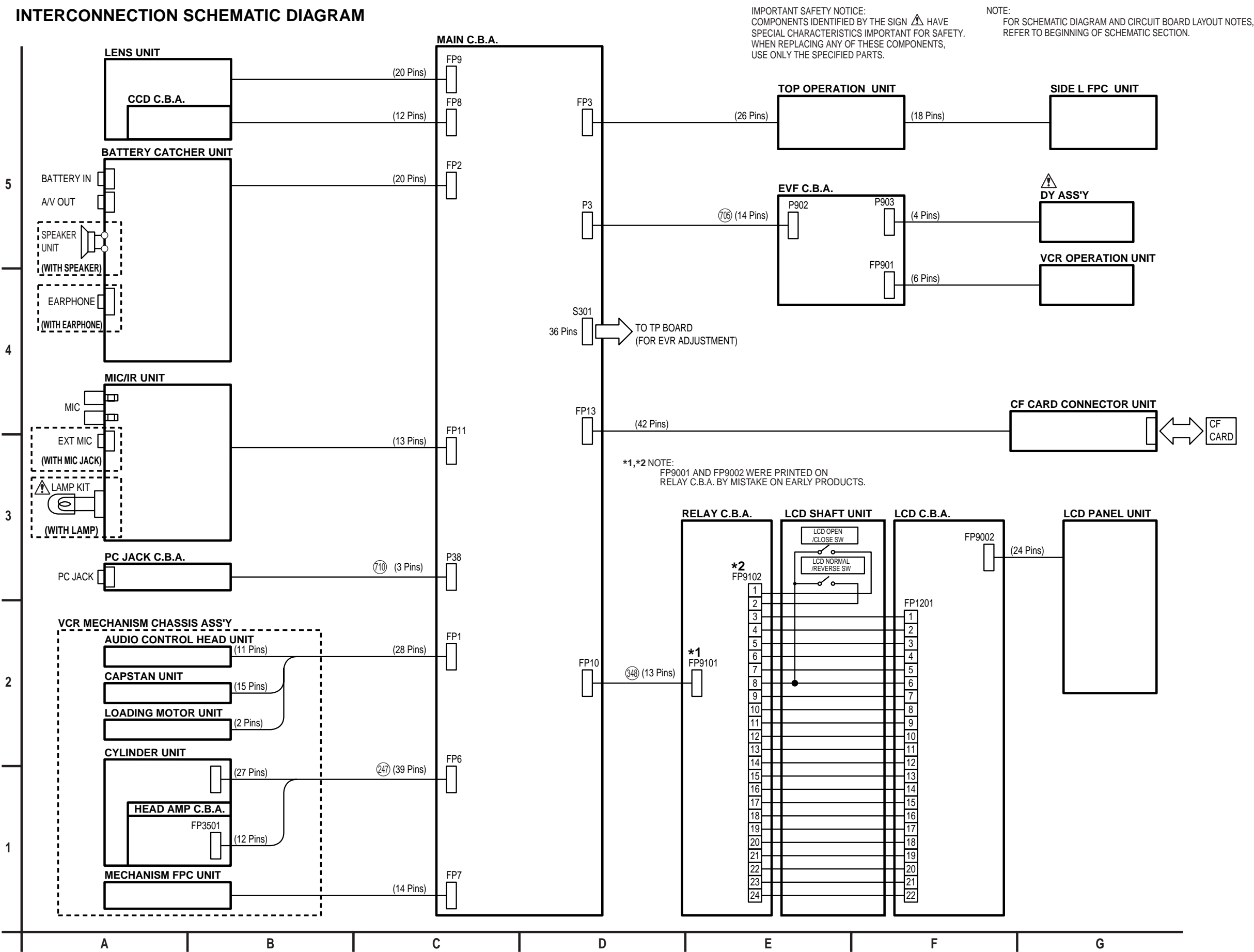
3

2

1

A B C D E F

INTERCONNECTION SCHEMATIC DIAGRAM



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (CAMERA SECTION)

MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA	MODE PIN NO.	CAMERA
IC301		55	3.5	110	1.3	11	0	34	3.6	89	0	144	3.6	199	3.6	31	3.4	IC605		6	0.2	C	4.6
1	3.5	56	0	111	3.3	12	0.6	35	3.6	90	---	145	3.6	200	2.1	32	3.5	1	0	7	0	B	2.4
2	0	57	3.5	112	1.9	13	0.6	36	3.6	91	---	146	0	201	0.4	33	3.5	2	1.9	8	0	Q311	
3	0	58	---	113	0	14	2.5	37	3.6	92	---	147	0	202	---	34	0	3	---	9	0	E	1.8
4	3.5	59	---	114	3.5	IC503		38	3.6	93	---	148	3.6	203	3.6	35	0	4	---	10	0.3	C	4.6
5	0	60	---	115	0.1	1	7.2	39	---	94	---	149	3.6	204	---	36	1.4	5	2.0	11	0.3	B	2.4
6	---	61	---	116	0.4	2	9.6	40	0	95	---	150	0	205	0	37	0.3	6	4.4	12	0	Q617	
7	---	62	---	117	0	3	2.4	41	0	96	---	151	3.6	206	3.6	38	3.5	7	1.3	13	0.3	E	1.1
8	---	63	0	118	0	4	4.9	42	0	97	---	152	3.6	207	3.4	39	3.5	8	2.1	14	7.1	C	4.4
9	---	64	2.5	119	0	5	4.7	43	0	98	0	153	---	208	3.6	40	0	9	1.8	IC702		B	1.8
10	0	65	---	120	3.5	6	9.5	44	0	99	1.2	154	3.6	209	3.6	41	3.5	10	3.4	1	0	Q703	
11	---	66	---	121	0	7	---	45	0	100	3.7	155	1.0	210	0.8	42	0.8	11	0.3	2	0.3	E	0
12	---	67	---	122	0.3	8	---	46	3.6	101	3.7	156	3.6	211	3.6	43	1.1	12	0	3	---	C	3.5
13	---	68	---	123	3.4	9	---	47	3.6	102	0	157	3.6	212	3.6	44	0	13	---	4	1.2	B	0
14	---	69	1.7	124	0.8	10	---	48	3.6	103	0	158	0	213	3.6	45	0.3	14	---	5	1.2		
15	2.5	70	0	125	1.6	11	3.4	49	3.6	104	2.7	159	0	214	1.9	46	0.3	15	---	6	0	TP601	1.5
16	0	71	0	126	2.8	12	4.6	50	1.8	105	1.9	160	0	215	0	47	1.4	16	---	7	0		
17	1.7	72	1.2	127	0.8	13	0	51	1.8	106	3.6	161	0	216	---	48	---	17	3.4	8	0		
18	1.6	73	1.0	128	0.9	14	9.0	52	1.7	107	0	162	0	IC505		49	1.4	18	1.7	9	0		
19	1.6	74	1.9	129	0.8	15	0	53	3.6	108	3.6	163	---	1	---	50	1.7	19	3.4	10	0.3		
20	1.6	75	3.5	130	1.0	16	4.8	54	0	109	---	164	0	2	0	51	3.5	20	1.4	11	3.1		
21	1.4	76	0	131	0.7	IC504		55	3.6	110	0	165	0	3	---	52	0	21	0.2	12	0		
22	1.3	77	3.1	132	0.7	1	1.6	56	0	111	2.8	166	0	4	3.2	53	0	22	0.3	13	0.1		
23	1.1	78	2.8	133	0.9	2	0	57	0	112	0	167	0	5	2.5	54	3.5	23	---	14	6.3		
24	1.4	79	0	134	0	3	0.7	58	0	113	0.9	168	---	IC602		55	0	24	0.7				
25	1.7	80	3.5	135	2.5	4	0.3	59	0	114	---	169	2.5	1	0	56	3.5	25	0.1	Q301			
26	1.5	81	1.9	136	0.9	5	0.2	60	3.4	115	---	170	2.5	2	1.7	57	3.5	26	0	E	2.5		
27	0	82	1.0	137	---	6	0	61	0	116	---	171	---	3	1.7	58	1.7	27	2.3	C	4.5		
28	3.5	83	0	138	1.7	7	0.4	62	0	117	3.6	172	0.8	4	0.1	59	1.7	28	2.3	B	3.1		
29	1.6	84	1.7	139	0	8	0.4	63	0.4	118	1.0	173	3.6	5	1.5	60	---	29	4.4	Q302			
30	1.6	85	3.5	140	0	9	0.4	64	0.7	119	0	174	---	6	1.4	61	3.5	30	---	E	1.6		
31	---	86	0	141	0	10	0.4	65	1.8	120	0.2	175	3.6	7	---	62	3.5	31	3.1	C	3.1		
32	---	87	0	142	0	11	0.4	66	---	121	3.6	176	3.6	8	3.4	63	3.5	32	---	B	2.3		
33	0	88	---	143	0	12	0.4	67	3.6	122	---	177	0	9	0.1	64	3.5	33	1.8	Q303			
34	0	89	1.7	144	0	13	0.4	68	---	123	---	178	0	10	0.7	IC603		34	1.8	E	1.8		
35	0	90	1.7	IC306		14	0.4	69	---	124	1.0	179	0	11	0.1	1	-7.4	35	0	C	0		
36	2.5	91	0	1	---	15	3.6	70	---	125	1.0	180	0	12	0.9	2	-7.8	36	4.4	B	1.2		
37	3.5	92	0	2	3.5	16	0.4	71	3.6	126	1.0	181	0	13	0.2	3	-0.2	37	3.1	Q305			
38	0	93	2.5	3	3.5	17	0.4	72	0	127	1.0	182	0	14	0.4	4	0	38	1.9	E	2.9		
39	0	94	---	4	3.5	18	0.4	73	3.6	128	1.0	183	---	15	0.1	5	-0.4	39	1.9	C	4.5		
40	0	95	---	5	0.1	19	0.4	74	---	129	1.0	184	3.6	16	---	6	3.5	40	4.4	B	3.6		
41	0	96	2.5	6	1.5	20	---	75	---	130	0	185	3.5	17	0.4	7	0.1	41	0	Q306			
42	0	97	0	7	0	21	0	76	---	131	1.0	186	3.6	18	0.2	8	3.5	42	2.2	E	2.2		
43	0	98	1.0	8	3.5	22	0	77	---	132	1.1	187	0	19	---	9	0.1	43	2.3	C	0		
44	---	99	3.1	IC309		23	0	78	---	133	---	188	0	20	3.2	10	3.4	44	3.0	B	2.9		
45	0	100	0	1	13.5	24	0	79	0	134	---	189	3.6	21	---	11	---	45	0.1	Q307			
46	---	101	0.2	2	2.2	25	0	80	0.2	135	0	190	3.6	22	3.5	12	3.4	46	2.3	E	2.6		
47	---	102	0.3	3	2.2	26	0	81	0.8	136	0	191	3.6	23	2.0	13	0.3	47	3.4	C	0		
48	---	103	3.4	4	14.8	27	0	82	1.4	137	0.9	192	3.6	24	0	14	3.3	48	1.4	B	2.9		
49	---	104	3.4	5	1.4	28	---	83	1.4	138	0	193	0	25	3.5	15	0	IC701		Q308			
50	3.2	105	0	6	1.4	29	---	84	4.3	139	3.6	194	---	26	3.4	16	14.7	1	0	E	2.6		
51	0	106	0	7	0.1	30	---	85	3.6	140	3.6	195	---	27	0.2	17	-7.5	2	0.2	C	3.5		
52	3.5	107	3.4	8	3.4	31	3.6	86	1.5	141	0	196	---	28	0.1	18	-7.5	3	---	B	3.2		
53	0	108	1.7	9	0.1	32	3.6	87	4.7	142	---	197	2.7	29	3.3	19	0	4	1.2	Q310			
54	0	109	3.4	10	0.1	33	3.6	88	1.6	143	---	198	2.7	30	0.2	20	14.7	5	1.2	E	2.8		

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (POWER SUPPLY/VIDEO/AUDIO SECTION)

MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP
IC1001		6	4.5	61	0.5	14	2.3	Q1010		Q3003		TP3001	1.0
1	5.5	7	2.2	62	2.2	15	0.1	E	7.1	E	4.3	TP3002	2.7
2	7.1	8	0	63	4.5	16	0.1	C	0	C	0	TP3003	0.2
3	6.6	9	2.0	64	4.5	17	0	B	7.1	B	3.8	TP3004	3.0
4	1.5	10	2.1	65	0.2	18	2.9	Q1011		Q3004		TP3005	3.2
5	1.6	11	0.4	66	0.7	19	0	E1	1.9	E	3.3	TP3006	2.3
6	1.6	12	0	67	0	20	0	C1	6.7	C	3.4	TP4001	1.3
7	1.6	13	1.5	68	3.6	21	---	B1	1.3	B	4.1	TP4002	0
8	1.6	14	2.1	69	2.1	22	0	E2	1.5	Q3005		TP4003	0
9	1.5	15	3.9	70	4.5	23	0	C2	4.8	E	2.8	TP4004	0.2
10	1.6	16	0.4	71	4.6	24	1.7	B2	2.5	C	4.5		
11	1.6	17	2.1	72	1.6	25	0.7	Q1013		B	3.4		
12	0.9	18	2.1	73	1.8	26	1.7	E	7.1	Q3027			
13	7.1	19	2.5	74	0	27	4.6	C	5.0	E	1.8		
14	7.1	20	2.1	75	0.2	28	1.7	B	6.5	C	4.9		
15	0.5	21	2.0	76	2.1	29	4.6	Q1015		B	2.4		
16	1.4	22	3.0	77	0.2	30	1.7	E	7.1	Q4002			
17	0	23	4.0	78	0.1	31	2.3	C	7.1	E1	3.5		
18	0	24	3.2	79	2.4	32	2.3	B	7.8	C1	4.1		
19	0.2	25	2.9	80	2.1			Q1016		B1	4.5		
20	7.0	26	0	IC3002		Q1001		E	13.2	E2	4.5		
21	7.1	27	3.2	1	2.2	E	7.1	C	15.0	C2	3.9		
22	7.1	28	4.5	2	0	C	7.1	B	13.9	B2	3.6		
23	4.2	29	2.7	3	4.5	B	0.1	Q1017		Q4003			
24	1.0	30	0	4	3.0	Q1002		E	0	E	0		
25	0.7	31	2.4	5	0	E	0.1	C	13.9	C	0.1		
26	1.6	32	3.0	6	2.6	C	0	B	0.6	B	0.8		
27	0.1	33	0	7	1.7	B	0.1	Q1018		Q4004			
28	0.2	34	3.4	8	2.8	Q1003		E	0	E	0		
29	0.1	35	-4.5	9	4.5	E	2.0	C	-5.4	C	0		
30	0.1	36	2.5	10	0	C	0	B	-0.6	B	0.8		
31	1.6	37	2.4	11	2.5	B	1.4	Q1019		Q4008			
32	1.5	38	2.3	12	2.6	Q1005		E	-8.1	E	0		
33	6.3	39	2.8	13	2.9	E	7.1	C	-15.2	C	0		
34	7.0	40	1.3	14	0	C	4.6	B	-8.1	B	0		
35	5.4	41	1.4	15	2.5	B	6.6	Q1024		Q4009			
36	6.5	42	2.2	16	4.5	Q1006		E	6.8	E	0		
37	7.0	43	2.2	17	0	E	7.1	C	7.1	C	4.6		
38	6.5	44	3.1	18	2.4	C	3.6	B	7.1	B	0.1		
39	7.2	45	0.2	19	2.6	B	6.8	Q1101		Q4010			
40	6.1	46	---	20	2.3	A	0	E	7.1	E	4.6		
41	0.3	47	---	IC4001		Q1007		C	1.9	C	0		
42	0	48	---	1	2.3	E	7.1	B	7.1	B	4.6		
43	7.4	49	2.1	2	2.3	C	3.6	Q1102		Q4011			
44	7.0	50	2.1	3	---	B	6.8	E	0	E	0.2		
45	7.4	51	2.1	4	2.3	Q1008		C	7.1	C	4.6		
46	7.4	52	4.5	5	0	E	7.1	B	0	B	0.2		
47	7.1	53	2.3	6	0.2	C	4.7	Q1103					
48	6.4	54	0	7	1.7	B	6.6	E	7.1	TP1001	4.6		
IC3001		55	2.8	8	4.5	A	0	C	0	TP1002	4.6		
1	2.2	56	3.6	9	2.3	Q1009		B	7.1	TP1003	15.0		
2	---	57	-4.5	10	3.5	E	7.1	Q1105		TP1005	-7.9		
3	4.1	58	3.0	11	4.2	C	6.4	E	7.1	TP1006	3.6		
4	0.1	59	0	12	2.3	B	6.8	C	0	TP1007	4.7		
5	2.0	60	4.4	13	4.5	A	0	B	7.1	TP1008	13.2		

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (SYSTEM CONTROL/SERVO SECTION)

MODE PIN NO.	REC	PLAY	MODE PIN NO.	REC	PLAY	MODE PIN NO.	REC	PLAY	MODE PIN NO.	REC	PLAY	MODE PIN NO.	REC	PLAY	MODE PIN NO.	REC	PLAY
IC2001			55	0.8	0.8	15	4.6	4.6	70	2.3	2.3	6	0.1	4.6	TP6104	4.6	4.6
1	2.1	2.1	56	0	0	16	4.5	4.5	71	0	0	7	1.8	0	TP6105	4.6	4.6
2	0.6	0.6	57	2.3	2.3	17	4.5	0	72	2.2	2.2	8	0	0	TP6106	4.6	4.6
3	0.6	0.7	58	2.3	2.3	18	0.1	0.1	73	4.6	4.6	IC6203			TP6107	0	0
4	3.0	3.0	59	2.3	2.3	19	0.1	0.1	74	2.7	2.3	1	1.2	1.2	TP6108	0	0
5	0	0	60	2.3	2.3	20	4.5	4.5	75	2.0	2.3	2	0	0	TP6109	0	0
6	0.1	0.1	61	2.3	2.3	21	0.1	0.1	76	2.3	2.2	3	0	0	TP6201	2.3	2.3
7	0.1	0.1	62	---	---	22	0	0	77	4.6	4.6	4	4.2	4.4	TP6202	2.3	2.2
8	2.3	2.3	63	---	---	23	2.3	2.3	78	0	0				TP6205	2.1	2.3
9	2.3	2.3	64	---	---	24	0.1	0.1	79	2.5	2.5	Q6004			TP6206	2.0	2.3
10	2.3	2.3	IC2002			25	4.6	4.6	80	---	---	E	4.6	4.6	TP6207	2.3	2.3
11	2.3	2.3	1	1.0	1.0	26	4.5	0	81	4.6	4.6	C	4.5	0	TP6208	0.8	0.8
12	2.3	2.3	2	2.6	3.7	27	0.2	0.1	82	4.6	4.6	B	3.9	4.6	TP6210	2.2	2.2
13	2.3	2.3	3	1.0	1.0	28	4.5	0	83	0	0	Q6006			TP6212	0.9	1.8
14	6.9	7.0	4	2.6	3.7	29	4.5	0	84	4.6	4.6	E	4.6	4.6	TP6215	0	0
15	1.8	1.8	5	1.0	1.0	30	0.2	0.3	85	4.1	4.1	C	4.6	4.6	TP6216	0.2	4.6
16	1.9	1.8	6	2.7	3.7	31	4.6	4.6	86	4.4	0.1	B	3.9	3.9	TP6220	1.0	0.9
17	1.8	1.8	7	2.0	2.0	32	2.5	2.5	87	0	0.1	Q6008					
18	0.5	0	8	1.0	1.0	33	2.0	2.0	88	0.1	0.1	E	0	0			
19	0.5	0	9	0.5	0.5	34	2.1	2.1	89	2.2	0.1	C	0	4.5			
20	0.4	0.6	10	1.0	1.0	35	---	---	90	4.2	0.1	B	4.5	0			
21	7.2	6.7	11	0.5	0.5	36	4.6	4.6	91	0.3	0.3	Q6010					
22	6.9	6.7	12	1.0	1.0	37	---	---	92	4.6	4.6	E	0	0			
23	6.5	6.7	13	0.5	0.5	38	1.4	0	93	0.4	0.3	C	0	0.1			
24	0.5	0.5	14	0.1	0.1	39	0	0	94	4.6	2.0	B	0	0			
25	0.5	0.5	IC2003			40	0.6	0.7	95	4.6	4.6	Q6012					
26	0.5	0.5	1	1.8	1.9	41	---	---	96	4.6	4.6	E	0	0			
27	2.6	0.1	2	6.5	6.5	42	4.6	4.6	97	4.6	4.6	C	4.5	0			
28	2.6	2.5	3	1.8	1.9	43	4.5	4.6	98	2.3	2.3	B	---	---			
29	1.0	0.9	4	6.5	6.5	44	4.5	4.5	99	4.6	4.6	Q6013					
30	1.0	1.0	5	0.1	1.9	45	0	0	100	0.1	0.1	E	0.4	0.4			
31	1.0	0.9	6	6.5	6.5	46	---	---	IC6002			C	7.0	7.0			
32	1.0	0.9	7	6.9	6.9	47	4.6	4.6	1	4.6	4.6	B	0	0			
33	2.0	2.0	8	1.8	1.9	48	0	0	2	4.6	4.6	Q6021					
34	2.2	0	9	0.5	0.4	49	0	0	3	---	---	E	7.0	7.0			
35	2.2	2.2	10	1.8	1.9	50	2.4	2.3	4	0	0	C	7.0	0			
36	1.7	1.7	11	0.5	0.5	51	4.6	4.6	IC6005			B	0	6.3			
37	1.7	1.7	12	1.8	1.9	52	2.3	2.2	1	0.8	0.8						
38	1.3	1.3	13	0.5	0.5	53	2.3	2.3	2	0.9	0.9	TP6001	0.8	0			
39	1.3	1.3	14	0.1	0.1	54	4.5	4.5	3	1.0	0.8	TP6003	0.1	0.1			
40	0.1	0.1	IC6001			55	0	0	4	0	0	TP6004	---	---			
41	0.1	0.1	1	4.6	4.6	56	0	0.1	5	0.2	0.2	TP6006	4.5	0			
42	0	0	2	0	4.5	57	0	0	6	4.5	4.5	TP6007	---	---			
43	0.1	0	3	4.6	4.6	58	0.5	0.5	7	4.5	4.5	TP6010	4.6	4.6			
44	2.1	2.1	4	0.1	0.1	59	0	0	8	4.3	4.3	TP6011	4.5	---			
45	0.7	0.7	5	4.5	4.5	60	0.3	0.3	IC6006			TP6012	4.6	4.6			
46	0.6	0.6	6	4.5	4.5	61	0	0	1	0	0	TP6014	4.5	4.5			
47	0.3	0.3	7	0.1	0.1	62	4.5	4.6	2	7.0	7.0	TP6015	4.5	4.5			
48	2.1	2.1	8	0.1	0.1	63	0	0	3	4.6	4.6	TP6020	4.1	4.1			
49	6.1	6.3	9	4.6	4.6	64	0	0	IC6007			TP6021	3.1	3.1			
50	2.0	2.0	10	4.5	4.5	65	2.2	2.2	1	2.1	2.0	TP6022	3.1	3.1			
51	0	0	11	3.5	3.5	66	0.8	0.8	2	7.0	7.0	TP6023	0	0			
52	4.6	4.6	12	0.1	0.1	67	2.3	2.3	3	7.0	7.0	TP6101	0.1	0			
53	2.2	2.2	13	0.1	0.1	68	2.3	2.3	4	0.1	0	TP6102	0.1	0			
54	---	---	14	4.5	4.5	69	2.3	2.3	5	0.1	0.1	TP6103	0	0			

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

LCD C.B.A

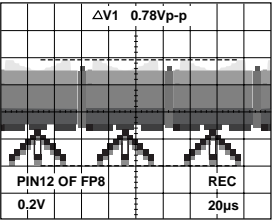
MODE PIN NO.	CAMERA
IC9001	
1	1.8
2	1.8
3	1.8
4	0.1
5	0.1
6	0.1
7	0.1
8	1.5
9	3.8
10	2.6
11	2.6
12	2.6
13	2.6
14	2.6
15	2.6
16	2.6
17	0.1
18	7.5
19	0.1
20	0.1
21	0.5
22	1.7
23	1.7
24	1.7
25	3.5
26	1.9
27	1.7
28	0.1
29	0.1
30	0.1
31	0.6
32	0.3
33	1.8
34	3.1
35	0.1
36	0.1
37	0
38	3.4
39	0.1
40	0
41	3.5
42	0.2
43	3.4
44	3.5
45	0.1
46	3.4
47	2.1
48	2.1
IC9002	
1	6.6
2	-15.6
3	6.6
4	6.6
5	13.1

MODE PIN NO.	CAMERA
Q1203	
E	3.4
C	3.4
B	0.1
Q1206	
E	13.2
C	13.1
B	12.5
Q1207	
E	0.1
C	0.1
B	4.2
Q1208	
E	7.5
C	13.1
B	8.1
Q1209	
E	0.1
C	8.1
B	0.7
Q1210	
E	-15.5
C	-15.1
B	-14.3
Q1211	
E	-15.5
C	-15.0
B	-15.1
Q1212	
E	0.1
C	-14.3
B	-0.4
Q1213	
E	5.0
C	7.0
B	5.5
Q1214	
E	3.4
C	3.4
B	0
Q1215	
E	0.1
C	0.1
B	0
Q9004	
E	0.1
C	3.5
B	0.1
Q9005	
E	3.5
C	15.0
B	3.5
Q9051	
E	0
C	4.5

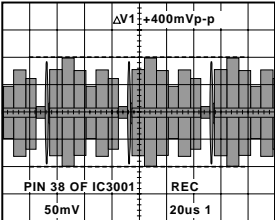
EVF C.B.A.

[illegible][illegible]

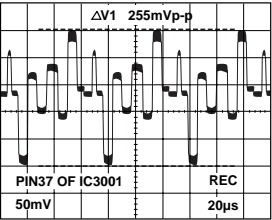
MAIN C.B.A.



WF1

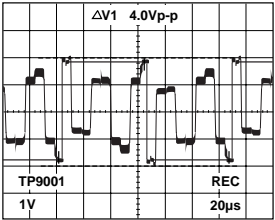


WF7

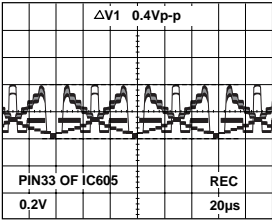


WF13

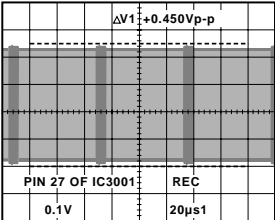
LCD C.B.A.



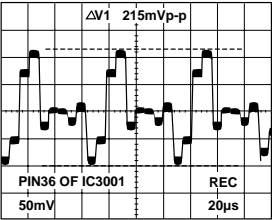
WF19



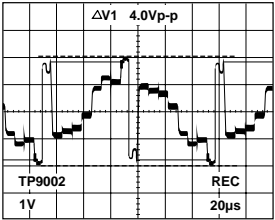
WF2



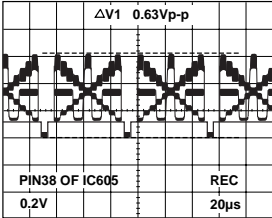
WF8



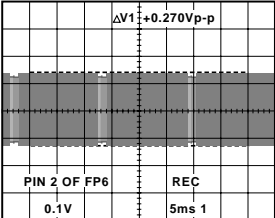
WF14



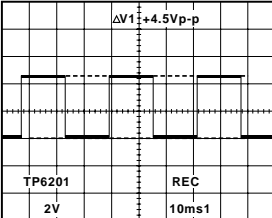
WF20



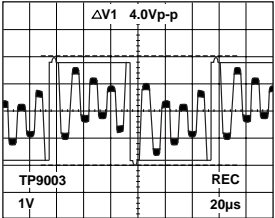
WF3



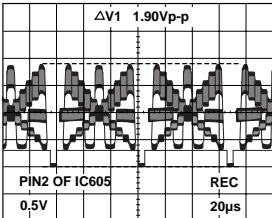
WF9



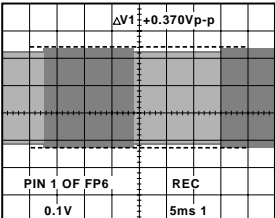
WF15



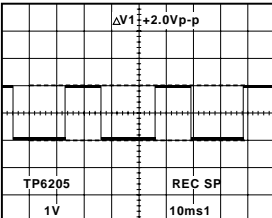
WF21



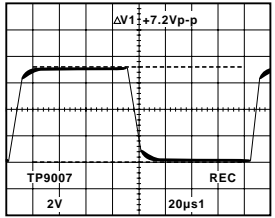
WF4



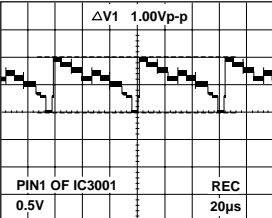
WF10



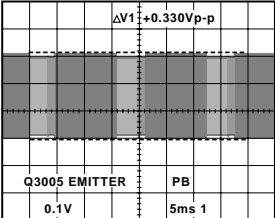
WF16



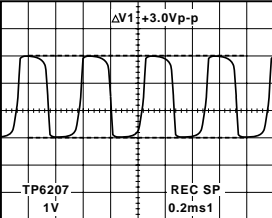
WF22



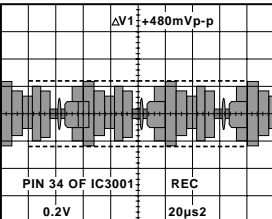
WF5



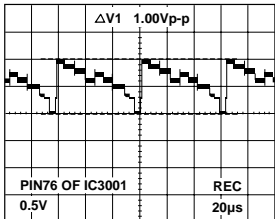
WF11



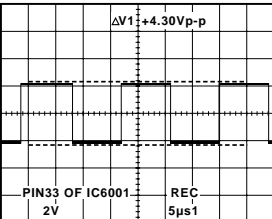
WF17



WF6



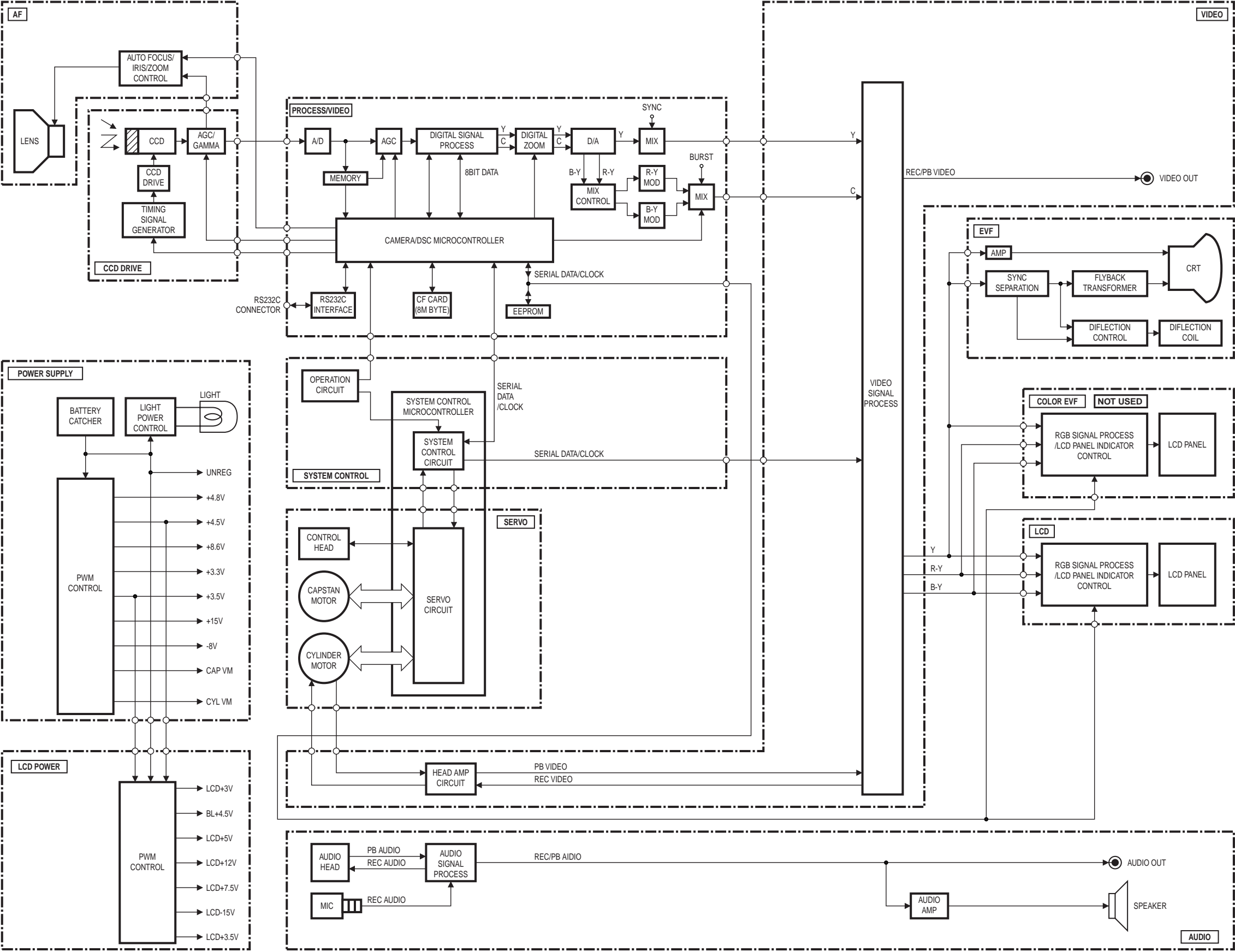
WF12



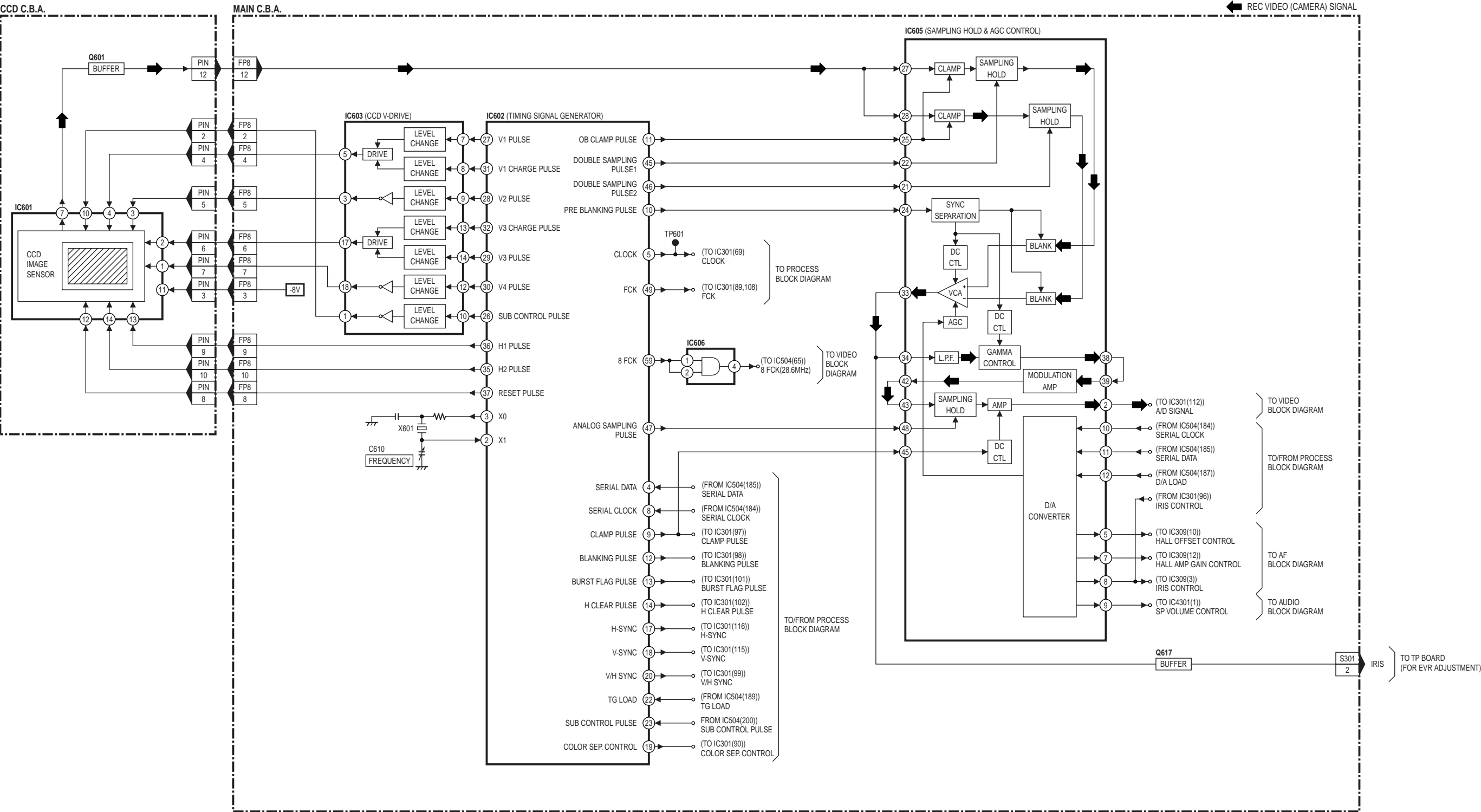
WF18

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

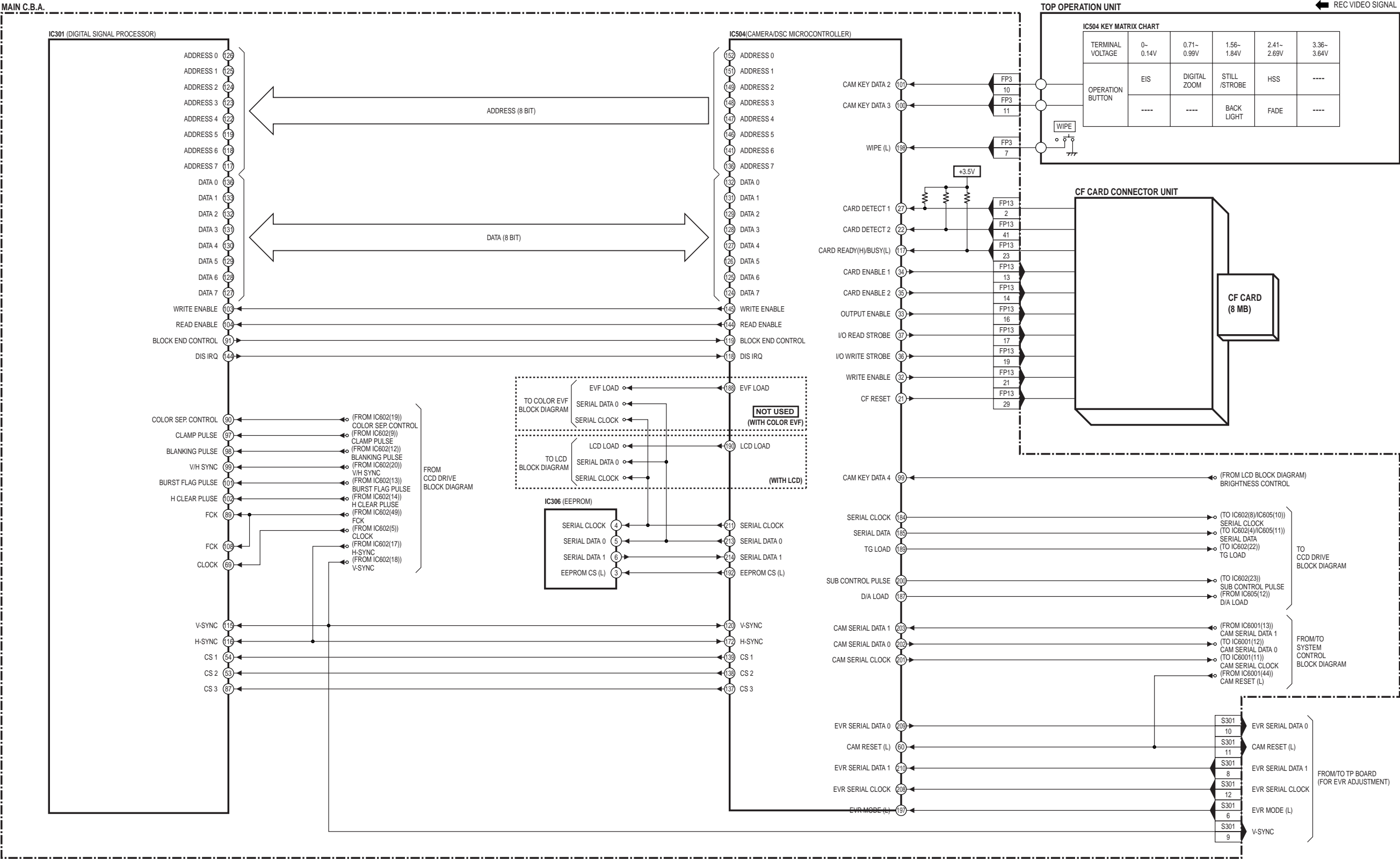
OVERALL BLOCK DIAGRAM



CCD DRIVE BLOCK DIAGRAM



PROCESS BLOCK DIAGRAM



[illegible]

AUDIO BLOCK DIAGRAM

